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TEXAS DEPARTMENT OF AGRICULTURE
BULLETIN

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U. S. Department of Ag

July-August, 1913. No. 41

Sheep Production in Texas

By

JOHN McKINLEY JONES, A. M.
Animal Husbandman in Charge of Breeding Investigations
Texas Experiment Station, College Station, Texas.

and

J. E. BOOG-SCOTT
Coleman, Texas.

FRED W. DAVIS,
Commissioner of Agriculture.

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ERRATA.

Note.—By oversight in the Department office the proof of this bulletin was not submitted to the authors. Had it been the corrections noted in this errata, both of typographical errors and insertions and erasures from copy would have been made.

Contents, column 2, line 25, word 4, should be "Ration."
Contents, column 2, line 6 from bottom, word 1 should be "Rules."
Page 7, line 4 from bottom, asterisk should precede word 1.
Page 8, middle page reference should follow first marginal on page 7.
Page 10, "because" should follow word "largely" on line 6, paragraph 2.
Page 11, line 2 from bottom, word 3 should be "feeder."
Page 12, line 1, after picture, insert "and of" after "size," and strike out "and."
Page 19, line 4, in "Standard of Excellence" should read: "Back-Straight with full spring of rib."
Page 21, line 3, word 5 in "Scale of Points" should be "Ears."
Page 21, end of line 9 should be semicolon.
Page 21, line 2, word 6, should be "black."
Page 23, third from last line should be "breadth."
Page 24, third line from top, word 4, should be "tip."
Page 24, line 8, word 1, should be "should."
Page 25, line 2, word 3 from end above picture should be "scurs."
Page 27, "Roman" in line 4 "Scale of Points" should be capitalized.
Page 28, line 2 from top, word 8, should be "sprung."
Page 28, line 2 from top, word 10, should be "no."
Page 30, line 20, last word "Scale of Points," should be "or."
Page 32, line 10, last word under picture should be "Karakule."
Page 37, figures on line 6, paragraph 6, should be "67."
Page 41, insert "and water" after "turpentine," next to last line paragraph 2.
Page 46, line 12, should read $Ca\ SC_4 + Na_2\ CO_3 + water = Ca\ CO_3 + Na_2\ SO_4 + water$."
Page 46, line 13, double asterisks should follow word 2.
Page 46, marginal footnote should be "**Reprint No. 47—Park, Davis & Co."
Page 46, line 36, word 6 should be "forming."
Page 48, line 9, word 2, should be "pounds."
Page 50, line 5, should be subhead.
Page 52, line 6, should read "4-6 ounces raw linseed oil."
Page 63, Table 1, insert asterisk after title of table.
Page 64, line 1, strike out asterisk.
Page 72, next to last line, word 4 should be "flesh."
Page 83, line 6, word 6 should be "Never."
Page 85, line 8, word 4, should be "prime."
Page 85, paragraph 3, words 19 and 13 should be "represented" and "report."

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FOREWORD

The following pages are written in an effort to aid those farmers who have not made a study of flock husbandry, but who have come to realize its importance as a part of the general farm operations. In this brief treatise a short discussion of the most prominent breeds is presented; also a few practical suggestions as to the general management of the flock throughout the year. This edition is supplemented by testimonials from some of the practical sheepmen of the State, each of whom recognize flock husbandry as necessary in the most successful farm operation.

In the preparation of this publication, the works of all the leading American writers on sheep production have been consulted. Special acknowledgment is due Professor W. T. Ritch, the Australian Wool Expert, for valued suggestions regarding the preparation of wool for market, and to Professors A. B. Comer and A. H. Leidigh for suggestions regarding Texas Forage Crops.

INTRODUCTION

Sheep belong to the order Ruminantia, to the tribe Capridae, and to the genus Ovis. Of the latter, there are three varieties:

(1) Ovis Ammon or Argali;
(2) Ovis Musmon;
(3) Ovis Aries.

The domestic sheep belong to the variety Ovis Aries.

History shows that the sheep has been a domestic animal since the beginning, supplying food and clothing for man. Through all civilization the pastoral industry has figured prominently in the making of the world's history. Records show that in the development of the sheep industry in the leading foreign countries very strict laws protecting the sheep industry were originally enforced. For a time in Great Britain, for example, to export a sheep was a crime punishable by death and the importation of wools from foreign countries was strictly forbidden. The wisdom of the enforcement of such laws is shown by the fact that today the sheep industry in the British possessions is far ahead of the industry in America, or any other country.

The American wool grower has, in by-gone years, not received material assistance or encouragement from the National Department of Agriculture. It is pleasing, however, to state that the United States Department is at the present time, becoming very much interested in the sheep problems of the country and, with its competent staff of sheep experts, will exert a powerful aid in the upbuilding of this important industry in America.

The importance of the sheep industry seems to have been overlooked in by-gone years by those not intimately associated with it. This statement is borne out by the fact that for several years the sheep industry of the United States has been steadily declining in spite of the fact that there is a growing demand for sheep and wool products. During the year ending June 30, 1914, a total of 245,931,772 pounds of wool valued at $52,617,837 was imported from foreign countries,* while during the same year the total amount of wool produced in the United States aggregated 290,192,000 pounds, an amount but slightly greater than that imported.

There is a demand for every pound of wool produced in the world at the present time, and it is of the utmost importance that the sheep industry of America receives every aid and encouragement possible in order to promote this essential and profitable branch of live stock production.

In order to present the seriousness of the situation, it might be stated frankly that were the United States to become involved in a long war with Great Britain, our annual imports of nearly 250,000,000 pounds of wool would be almost entirely shut off and the demand for wool would be twice as large as the available supply. The writers do not for a moment believe that it will ever become

*U. S. Department of Agriculture Report, 1914.

necessary to depend wholly upon our wool supply, but in view of the fact that the sheep business can be conducted on a profitable basis in the United States, and especially in the southern portion thereof, the farmers should lose no time in engaging in this line of live stock production.

THE SHEEP INDUSTRY IN TEXAS

Sheep raising has been an important branch of the live stock industry in Texas for many years, but as indicated by the following figures, the number is seen to be on the decline:

Year.	Number of Sheep.
* 1870	1,137,300
* 1875	1,691,400
* 1880	6,023,628
* 1883	7,956,275
* 1885	6,802,615
* 1890	4,990,272
* 1895	3,065,256
** 1900	2,317,636
** 1914	2,114,000

The early nineties were disastrous years for the sheep industry, owing to the low prices received for sheep and wool. The sheep industry of the United States has never been a stable industry, because of continued tariff agitation, and not until tariff regulation has been removed from the grasp of the politician is it likely that this great industry will become established on a sound basis.

Sheep have been produced in Texas for a long period of years, and many a man who had little capital at the outset, has accumulated a large fortune at this occupation. While it is true that many of the flockmen of Texas accumulated much wealth at this occupation, many were forced out of the business on account of a lack of finances. Low prices for sheep and wool together with severe losses, due largely to storms, caused many failures.

The center of the sheep industry in Texas is out in the range country in the western and southwestern portions of the State. At present there are something over two million head of sheep in the State of Texas. This industry has declined materially since 1890, at which time the number of the Ovine quadrupeds numbered five million head.

Texas has an area of 265,780 square miles; she lies between 24° and 35° north latitude, and between 17° and 30° longitude west from Washington, D. C. The altitude varies from sea level to about 5000 feet above.

CLIMATE.

The climate of Texas is comparable to that of Australia. Sheep thrive well in Texas. Owing to the mild winters the sheep usually do well on the range without being supplied with concentrated feed.

*Signal Service reports, covering a number of years, show that, at San Antonio, the mercury drops down to freezing only fourteen times in a year, and that the average number of clear and fair days is about 287 out of each year. While it is not the intention to

*Fourteenth Annual Report, U. S. Bureau of Animal Industry, 1897, page 297.

**U. S. Department of Agriculture Year Book, 1914.

apply these conditions to the entire State of Texas, they are said to be fairly expressive of the climatic conditions existing in the sheep growing areas of West Texas. An occasional year happens when some unusually severe storms sweep over the western ranges of the state, sometimes causing severe losses among herds and flocks.

COST OF PRODUCING SHEEP.

It is rather a difficult task to state the exact cost of carrying sheep per year in the range section of Texas, but it is probably in the neighborhood of $1.00 to $1.50 per head annually. Several years ago agents of the tariff board reported on the costs of raising sheep in the range country of the United States, and the report rendered shows an average cost of $2.11 per head annually. The cost of running sheep in Texas should average lower than that of most of the western sections, owing to the fact that the winters are comparatively mild, and sheep may, usually, be grazed on the range the entire year without the additional expense of extra feedstuffs, while at the same time labor is had at a comparatively low figure.

*Report, U. S. Sheep Industry, 1890.

In the farming sections where small flocks are kept, sheep often return their owners one hundred per cent annually on the money invested in them.

THE SHEEP INDUSTRY IN NORTHEAST TEXAS.

The farms in this section are considered as comprising some of the richest lands in the state. Flocks numbering from 50 to 500 head were at one time quite a common sight on farms in this section of the state, but in recent years they have been gradually cut down, until there is rather a limited number of sheep in this section at the present time. It is a mistake on the part of the individual farmers to allow this condition of affairs to exist when there is an enormous amount of waste in the way of weeds, grasses and grains, every year, on the unstocked farm. The testimony of farmers and stockmen, which follows later, will bear out the assertion that the small flock does not in any way hinder crop production, but on the other hand keeps down the weeds, thus making room for more grass and enriching the soil, while at the same time the crop yields are as large as ever.

Sheep produced in this section, under farm conditions, are not herded, but are given the free run of the pastures and fields. Managed in this way there are fewer losses than when grazed upon the range, owing to the fact that better protection can be offered and, usually, on these arable lands, better grazing is afforded.

There are some well bred Southdowns and Shropshire flocks in Northeast Texas at the present time and they are doing well. Formerly the bulk of the sheep in this section contained the blood of sheep native to Southeast Missouri and Arkansas. The flocks in this section are usually healthy, and disease is practically unknown.

THE SHEEP INDUSTRY IN CENTRAL TEXAS.

Central Texas does not produce as many sheep at the present time as formerly. In this section of the state the character of the soil is

black, and conditions are somewhat similar to those of Northeast Texas. An abundance of brush and nutritious grasses are produced in this section and sheep do very well. The claim is made that sheep from the north do not thrive in Texas the first year, but after they become acclimated they seem hardy and thrifty. Sheep brought from the northern climate shear less wool in the south, and do not attain the size reached by the same blood line further north.

THE SHEEP INDUSTRY IN CENTRAL WEST TEXAS.

This portion of the state is largely devoted to farming, although a number of large ranches still remain. It produces an abundance of forage, there being excellent growths of mesquite, gramma and sage grasses, and, in places, live oak, post oak and mesquite trees. The soil varies from a light black clay to a sandy character.

This section is adjacent to the range country, and offers an ideal location for feeding. Railroad transportation facilities are good, and the Fort Worth markets can be readily reached without delay.

THE SHEEP INDUSTRY IN SOUTHWEST TEXAS.

There are more sheep produced in Southwest Texas than in any other section of the state. The soil is of almost every character and description. There are some low-lying fertile black lands in the Rio Grande Valley, but the greater portion of the land in this section of the state is hilly, and of a limestone formation. Southwest Texas produces the mesquite, buffalo, gramma and sage grasses, and, in addition, the browsing offered by the live oak, hackberry chaparral, shin oak, and many other bushes and trees, make an ideal location for sheep and goat production.

During past years the losses of sheep and goats in this section of the state have been severe, owing to the depredations of such predatory wild animals as the wolf, coyote, mountain lion and wild cat. The state maintains a scalp bounty on these animals, and they are being gradually exterminated. Many of these flockmen in the West Texas country have constructed wolf-proof fences, using a mesh wire about 41 inches in height, running in addition a barbed wire along the ground on the outside of the fence and placing from two to three barbed wires above the mesh wire. These fences are constantly gaining in popularity. The stockmen have come to the conclusion that the flocks thrive better running at random in the pasture rather than being herded closely in one band. The rainfall is generally light in South and West Texas; hence the flocks do not suffer materially from cold rains, although in years gone by an occasionally severe rainstorm has been followed by a brisk "norther" which has caused many losses among flocks.

The chief advantages of the Southwest for sheep production are:

1. Cheap grazing lands.
2. Dry climate with little or no snow.
3. Infrequency of blizzards.
4. Fair marketing facilities.

BREEDS FROM WHICH TO SELECT.

The question "which is the best breed" is commonly asked by those unfamiliar with sheep. The best answer is that there is no one best breed. The different breeds frequently do better under different conditions. This is evidenced by the fact that in the British Isles, the British breeds were practically all raised under different conditions. The Cheviot and the Highland breeds are naturally best adapted to a high mountainous country providing plenty of feed. The Down breeds graze on the rolling downs of England, while the long wooled breeds are native to the lower lying arable hills and lands which produce an abundance of foraging.

In the western range country of the United States ranchmen have concluded that, under the old range system of handling the flocks, the Merino, or fine wool sheep, and their crosses, are best adapted to the ranges. The fine, dense fleeces serve as a protection against storms, and as grazers these sheep are in the front rank. They herd well together, and it is largely of this gregarious habit that the fine wool breeds are in more popular favor than the other breeds on the western ranges.

TYPES AND BREEDS OF SHEEP.

The American Merino.

Spain is the native home of the Merino, this fine wool sheep having

American Merino.

inhabited that country for many centuries. The old Spanish Merino was a small, narrow chested animal, very poorly fleshed, wrinkled,

and carrying a light fleece fine wool. It is from the original Spanish Merino that all sub-varieties of the Merino family have originated. Domestic sheep were first introduced into America by the Spanish about 1493, but these were probably not Merinos. The Spanish Merino was first imported into the United States along about 1802, since which time it has undergone wonderful improvements, brought about by a more rigid selection of breeding stock and more liberal feeding.

The American Merino is better adapted to a wider range of conditions than most any other breed, so far as our present knowledge of sheep is concerned. As range sheep Merinos are unexcelled; they flock together well, and are easy to herd compared with the other breeds. Compared with the mutton breeds the Merino is slow in reaching maturity. As a feeder it is fair. The flesh of the Merino is rather lacking in flavor and quality with a tendency to be rather dry. As a breeder it is only fair, being less prolific than the Down breeds. The rams cross well on grades where improvement in the quality of wool is desired.

The Merino remains unsurpassed as a wool producer, quality and fineness being considered. Well bred Merino ewes produce 12 to 18 pounds of wool.

There are three classes of Merinos:

Class A.—To this class belong those Merinos whose entire body is covered with folds and wrinkles. These sheep are frequently spoken of as the Vermont Merinos. They produce the finest quality wool of any of the Merinos, but stand at the foot so far as mutton conformation is concerned.

Class B.—To this class belong those Merinos whose neck, fore and rear quarters are covered with wrinkles, but whose bodies are comparatively free from folds. The individuals comprising this group are of the better mutton conformation than those of Class A, but the wool is not quite so fine.

Class C.—To this class belong those fine wools which, but for a few folds on the neck, are free from wrinkles and folds. The individuals comprising this class are larger bodied than those of Classes A and B. They are of a better mutton conformation but do not produce as fine a quality of wool. Delaines and Rambouillets comprise this class.

Delaine Merinos.

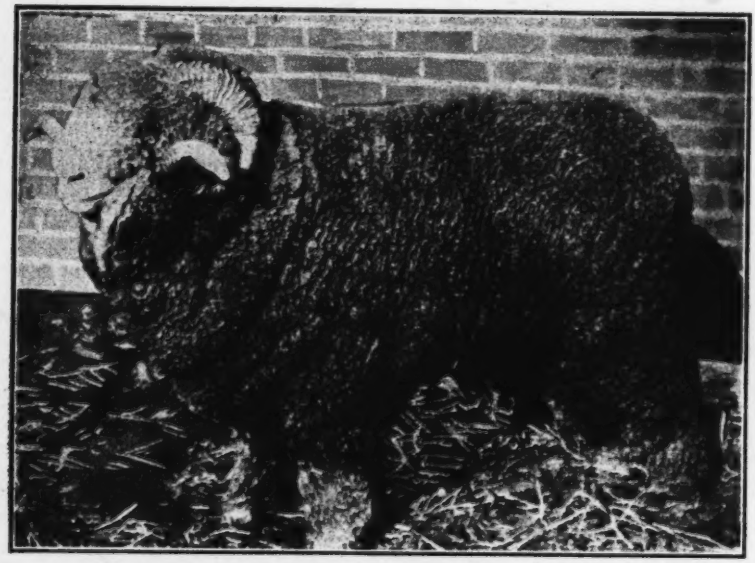
The Delaine belongs to the Merino family. Through breeding and selection, American breeders were successful in their efforts to produce a larger sheep and one of a better mutton conformation; this animal, at the same time, retaining the heavy fleece and of fine quality, although not quite equal to the American Merino in this respect. The wool from this sheep is of good length and is used in the manufacture of "delaine" or untwilled worsted goods.

The Delaine is adapted to about the same conditions as the American Merino. It perhaps does a little better than the American Merino under arable conditions, and maturity is reached at an earlier stage. As a feed it is good. The wool is not equal to that of the American Merino in fineness, yet a year's growth produces an excellent quality

of fine combing wool. As breeders the Delaines are slightly superior to the American Merino. For improving grade sheep the Delaines deserve special mention. It crosses well with the mutton breeds, early maturing, well proportioned lambs being produced.

The Rambouillet.

The Rambuoillet originated from some old Spanish Merinos which were taken to Rambouillet, France, in 1786, and through careful selection and breeding, under Government supervision, a superior animal has been produced. In the improvement of the old Spanish Merino the French, from the beginning, aimed to produce a sheep of



A Rambouillet Ram.

greater size, better mutton form and the fine wooling qualities, at the same time, being retained.

The Rambouillet was imported to America in 1840. It has a wide range of adaptability, apparently thriving under arable, as well as arid conditions. It is an excellent grazer, and is noted for its longevity. The Rambouillet is the largest of the fine wool breeds. It does not produce such a fine quality of wool as is produced by the American Merino and the Delaine, but this is nevertheless of excellent quality and does not shrink as much during the scouring operation as do those of the American Merino and the Delaine.

The blood of this sheep is predominant on the range of the Great West. Rambouillets are fair breeders, and the ewes, under proper management, supply the lambs with plenty of milk. The lambs make good daily gains and do well in the feed lot. The Rambouillet meets with very popular favor in improving the grade sheep of the range.

This breed crosses well with the mutton breeds, producing a lamb of strong constitution, good mutton conformation and superior feeding qualities.

Scale of Points for Fine Wooled Sheep.*

	Perfect score.
General appearance:	
Form—Level, deep, stylish, round rather than square	8
Quality—Clean, fine bone; silky hair; fine skin	6
Head and neck:	
Muzzle—Fine; broad wrinkly nose; pure white	1
Eyes—Large, clear, placid	1
Face—Wrinkly, covered with soft, velvety coat	1
Forehead—Broad, full	1
Ears—Soft, thick, velvety	1
Neck—Short, muscular, well set on shoulders	1
Forequarters:	
Shoulders—Strong, being deep and broad	4
Brisket—Projecting forward, breast wide	1
Legs—Straight, short, wide apart; shank smooth and fine	2
Body:	
Chest—Deep, full, indicating constitution	10
Back—Level, long; round ribbed	4
Loin—Wide, level	4
Flank—Low, making underline straight	2
Hindquarters:	
Hips—Far apart, level, smooth	2
Rump—Long, level, wide	4
Legs—Straight, short, strong; shank smooth, fine	2
Wool:	
Kind—Domestic, clean and bright.	
Territory, dirty or discolored.	
Carpet / Blanket } Hairy or having dead fibers.	
Class—Clothing, fiber under two inches in length or unsound.	
Delaine, fiber two or three inches in length.	
Combing, fiber over three inches in length and sound.	
Grade—Fine, medium or coarse.	
Quantity—Long, dense, even covering, especially over crown, cheek, armpit, hind legs and belly	15
Quality—Fine fiber, crimp close, regular; even quality including tops of folds	15
Condition—Bright, lustrous, sound, pure, soft, even distribution of yolk, with even surface of fleece	15
Total	100

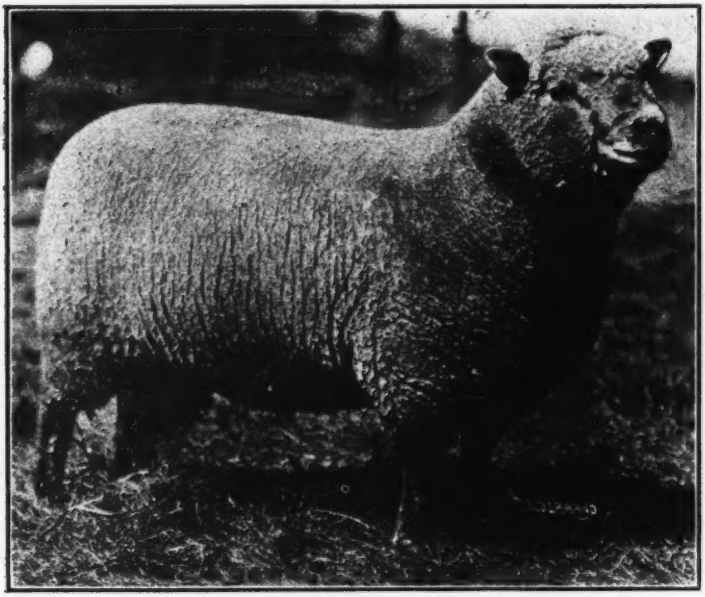
*"Judging Live Stock," by Craig.

The Southdown.

The native home of the Southdown is on the hills or downs, in Southern England. It is the oldest of the Down breeds, and in its present state of perfection represents an ideal mutton form.

The origin of the Southdown is rather obscure, but it is believed that the original parent stock were the old sheep native to the County of Sussex. The most prominent early improvers were John Ellman and Jones Webb, who began their work of improvement about 1780. In form, it is the lowest, most compact, broadest and most thickly fleshed of any breed of sheep.

The Southdown was imported to America in about 1803. It is



A Southdown Ram.

adapted to dry, hilly land, producing an abundance of short herbage. Southdowns are good breeders, producing a high percentage of exceptional lambs, which thrive well under proper management. The Southdown is easy to keep in condition; it crosses well with the fine wool breeds, producing an early maturing lamb of superior feeding and dressing qualities.

As a strictly range sheep the Southdown can not compete with the fine wools. A serious objection to the Southdown is its poor shearing qualities, the fleece averaging only between five and six pounds at a year's growth.

Standard of Excellence.

	Perfect score.
Head—Medium in size and hornless, fine, carried well up, the forehead or face well covered with wool, especially between the ears and on the cheeks, and in the ewe, slightly dished	5
Lips and under jaw—Fine and thin	1
Ears—Rather small, tolerably wide apart, covered with fine hair, and carried with a lively back and forth movement	2
Eyes—Full and bright	3
Face—A uniform tint of brown or gray or mouse color	3
Neck—Short, fine at the head, but nicely tapering, and broad and straight on top at the shoulders	4
Shoulders—Broad and full, smoothly joining the neck with the back	5
Breast—Wide, deep and projecting well forward, the forelegs standing wide apart	5
Back and loin—Broad and straight from shoulder to rump	7
Ribs—Well arched, extending far backward, the last projecting more than the others	6
Rump—Broad, square and full, with tail well set up	6
Hips—Wide with little space between them and last ribs	6
Thighs—Full and well let down in twist, the legs standing well apart	6
Limbs—Short and fine in bone, and in color to agree with the face	3
Forelegs—Well wooled and carrying mutton to the knees, but free from meat below	2
Hindlegs—Well filled with mutton and wooled to the hocks, neat and clean below	2
Belly—Straight and covered with wool, the flank extending so as to form a line parallel with the back or top line	5
Fleece—Compact, the whole body well covered with moderately long and close wool white in color, carrying some yolk	12
Form—Throughout smooth and symmetrical with no coarseness in any part	9
General apperance—Spirited and attractive with a determined look, a proud and firm step, indicating constitutional vigor and thorough breeding	8
Total	100

The Shropshire.

The native home of the Shropshire is near Bridgeworth, Shropshire County, England. This breed descended from the old breed known as "Morfe Common," which inhabited a piece of land bearing that name. Improvement was brought about by the introduction of Southdown, Leicester and Cotswold blood into the old Morfe Common sheep. The first great improvers were Samuel Meire and George Adney. The Shropshire was first imported to America in 1860. It is probably the most popular breed of farm sheep in America at the present day, owing largely to its excellent mutton qualities, medium size, and splendid production of wool of medium quality.

The Shropshire is a superior mutton animal; is a good feeder, and in the feed lot makes a large daily gain. It is a prolific breeder, producing a high percentage of lambs; it crosses exceptionally well with fine wool breeds, producing superior mutton lambs, which, at the same time, carry a very heavy fleece.

The Shropshire is adapted to a wide range of conditions. The fact of its great and increasing popularity speaks well for its adaptability. As grazers upon the range, the Shropshire cannot compete

with the fine wool, but where there is an abundance of grass it does well.

The Shropshire is larger than the Southdown and carries a fleece averaging from 9 to 11 pounds in well bred animals. The fleece is

Shropshire Lambs.

very dense, hence it is able to withstand wet weather to good advantage. The Shropshire is valued highly for crossing with the fine wool sheep for the production of market lambs.

Scale of Points.

1. *Type and general appearance:*
   An alert attractive, and stylish appearance, showing, at a glance, the true characteristics of the Shropshire..... 30 points
2. *Form and constitution:*
   Head—To impress at once the Shropshire characteristics.
   Heads of rams—To be masculine, as indicated by a broad nostril, short and broad between ears and eyes.
   Neck—Short and muscular, fitting into shoulders in graceful outlines.
   Heads of ewes—To be feminine in appearance, medium in length, but not delicate.
   Neck—Not so strong as in the ram. In all cases head and face nicely covered with wool; ears short and erect; eyes bright; color of face brown to a clear dark (not sooty) black.
   Body—Well proportioned, with shoulders so placed as to fit in evenly to a deep, wide brisket. A full heart girth; broad level back; ribs well sprung, with straight under-line; loins thickly fleshed; fore and hind flank deep; a low coupled twist, and full leg of mutton.
   Legs—Brown to clear dark color (not sooty black) well set apart; short and straight with strong upright pasterns.
   Size—When fully matured and in proper breeding condition, rams should weigh not less than 175 to 250 pounds, and ewes not less than 140 to 180 pounds..... 35 points
3. *Fleshing:*
   While the body should be well formed, with the full outline pleasing to the eye, yet it is the quality and quantity of flesh, not fat, which gives value to the carcass. Therefore the parts furnishing the high-priced cuts should be fully developed.

The back, loins, and legs should be so fleshed as to show a large percentage of flesh compared with the other parts of the body; at the same time symmetry must prevail throughout.

Strong bone in legs, conformable with size of body usually goes with a large proportion of lean meat to fat in the finished carcass..... 25 points

4. *Fleece and skin:*

Fleece of good length, elastic to the touch, medium fine and slightly crimped, free from black fiber and hairiness. Ram's scrotum to be well covered with wool.

Rams—Should shear 8 to 15 pounds of wool and ewes 7 to 11.

Skin—To be a bright cherry, or clear color and comparatively free from dark spots..... 10 points

Objections.

Long narrow head with long ears and neck; long legs; black wool on head to any noticeable extent, failure of wool to meet closely at the junction of face-wool and on cheeks; white spots on face and legs; crooked spines; light flanks, with long, weak pasterns; spotted skin; narrow chest showing lack of constitution.

Disqualification for Registry.

Such lack of type as to render it doubtful to a breeder what the breed is; horns or stubs, not scurs. Heads quite bare of wool.

An Oxford Ram.

The Oxford.

Oxford County England is the native home of the Oxford breed. In the development of this new breed Hampshire and Southdown ewes of superior breeding were crossed with superior Cotswold rams, and

their crosses put together. This breed was developed along about 1833, Samuel Druce and Wm. Gillett being the first noted improvers. In the Oxford we have size, uniformity of character, hardiness and heavy wooling qualities.

The Oxford was first imported to America along about the middle of the last century. It is thought not to have as wide a range of adaptability as the Southdown; it thrives best on luxuriant pastures and does not do its best when left to rustle on the range. The Oxford matures at an early age, but does not excel in this respect. It is a good average breeder, and the lambs feed out well when plenty of feed is available.

Compared with the Southdown, the Oxford is better adapted to the intensive system. The Southdown matures earlier, dresses out better and is of a superior quality. The Oxford excels in wool production, shearing a fleece of 9 to 11 pounds of medium wool.

Scale of Points.

		Perfect score.
1.	Form—Of good general appearance, made by a well balanced conformation free from coarseness in any part and showing good style at rest and in motion	15
2.	Head—Of moderate length and width between the ears and between the eyes, and well covered with wool over the poll and down to the eyes. Color of face, an even dark gray or brown with or without gray spots on the nose	6
3.	Weight—When fully matured and in good condition, rams should weigh 250 to 350 pounds; ewes 180 to 275	5
4.	Ears—Medium size, not too thick and of an even brown or dark gray color	2
5.	Legs—Short, strong in bone, flat and even, brown or dark gray color, placed squarely under the body and well apart	2
6.	Girth—Large around the heart and wide and full in the chest	10
7.	The movement must be bold and vigorous	5
8.	Eyes—Bold, prominent and bright	4
9.	Skin—Bright pink in color	3
10.	Neck—Strong and muscular in rams, and well set on in both sexes	3
11.	Back—Wide and straight on top of shoulders and back, loin and rump from base of neck to tail	15
12.	Full shoulders and thighs, well meated inside and out	5
13.	Flanks—Well filled and strong, so as to make the lower line of the body as straight as possible and side lines straight or rather full	4
14.	The whole carcass evenly covered with good, well-marbled meat	6
15.	Fleece—Of moderate length, close and of even quality, covering the whole carcass well and free from black patches on the body, neck or head	15
	Perfection	100

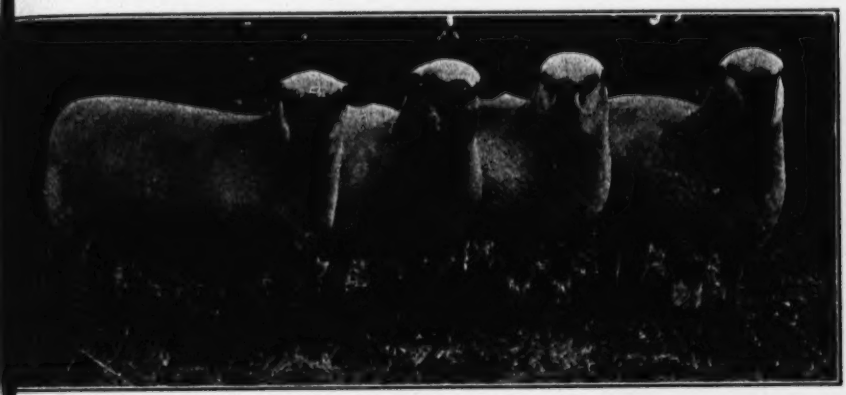
The Hampshire.

The native home of the Hampshire is in the counties of Hampshire and Wiltshire, England. The improved Hampshire of today is the result of a cross between the Wiltshire horned, the Berkshire Knot, and the improved Southdown. The native sheep of these counties were rather large and ungainly and were slow in reaching maturity. The early improvers were Wm. Humphrey and James Rawlence, who

began this work in the early 30's of the last century. Importation was first made to America in 1855.

The Hampshire is well adapted to arable conditions and does well in regions where there is plenty of grass. As an early maturer the Hampshire ranks high. It is generally regarded as being a prolific breeder, producing a high percentage of twins. The lambs mature rapidly and make exceptional records in the feed lot. The quality of mutton produced is very good, the flesh being well marbled. They produce from 7 to 9 pounds of medium wool.

The Hampshire crosses well with the fine wool breeds, producing



Hampshire Ewes.

a hardy, early maturing lamb which, when fat, brings a top price on the market. One disadvantage in crossing the Hampshire with the smaller breeds is the tendency of the former to produce a large boned lamb, and often a considerable loss is entailed as a result of difficult parturition.

Standard of Excellence.

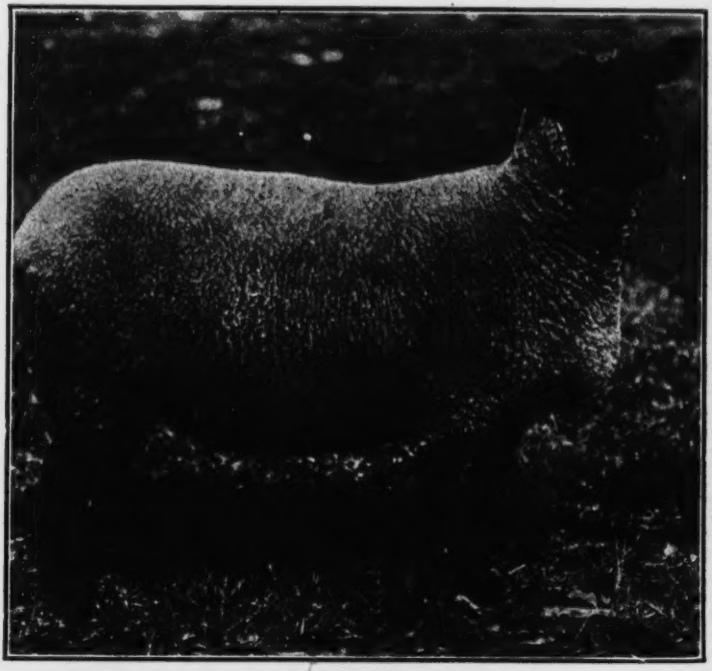
Head—Moderately large but not coarse; well covered with wool on forehead and cheeks.
Nostrils—Wide.
Color (head and legs)—Dark brown or black color.
Eyes—Prominent and lustrous.
Ears—Moderately long and thin, and dark brown or black color.
Legs—Well under outside of body, straight, with good size of bone; black.
Neck—A regular taper from shoulders to head, without any hollow in front of shoulders; set high up on body.
Shoulders—Sloping, full, and not higher than the line of back and neck.
Chest—Deep and full in the heart place, with breast prominent and full.
Back—Straight, with fullspring or rib.
Loin—Wide and straight, without depression in front of hips.
Quarters—Long from hips to rump, without sloping and deep in thigh; broad in hips and rump, with full hams, inside of thigh full.

Scale of Points.

	Perfect score.
Head—Size and shape, 5; ears and eyes, 3; color, 5; legs and feet, 2	15
Neck, shoulders and breast—Neck, 5; shoulders, 10; chest and breast, 15	30
Body—Back and loins, 15; ribs, 5	20
Quarters—Length, 10; width, 10; twist, 5	25
Wool—Forehead and cheeks, 2; belly, well covered, 3; quality, 5	10
Total	100

The Suffolk.

The native home of the Suffolk is in Suffolk and Norfolk Counties, England. The Suffolk breed has been developed as the result of an accidental mating of the old Norfolk horn ewe and the Southdown



A Suffolk Ewe.

ram. The cross between these two breeds showed some very desirable characters, and in the development of this new breed the best blood available was used. The Suffolk is believed to contain about five-eighths Southdown and three-eighths Norfolk horn blood.

Although the Suffolk is but little known in America at the present time it will, unquestionably, gain rapidly in public favor within the next few years.

The Suffolks have a wide range of adaptability, doing well on arable

and range lands. They are good feeders and make large daily gains. They produce a superior quality of rich, red meat, finely grained and free from an excess of fat. At the Smithfield show the Suffolk has won many times, both in the ring and in the carcass test.

Suffolks were imported to America in 1888, but have not been used extensively for cross-breeding owing to their limited number in this country.

The Suffolks are prolific breeders, and supply their young with plenty of milk. The fleece is rather light, but heavier than that of the Southdown.

Scale of Points.*

	Perfect score.
Head—Hornless; face black and long, and muzzle moderately fine, especially in ewes. (A small quantity of clean white wool on the forehead not objected to.) Eears a medium length, black and fine texture. Eyes bright and full	25
Neck—Moderate length and well set. (In rams stronger, with a good crest)	5
Shoulder—Broad [illegible] oblique	5
Chest—Deep and [illegible]	5
Back and loin—Long, level, and well covered with meat and muscle. tail broad and well set up. The ribs long and well sprung, with full flank	20
Legs and feet—Straight and back, with fine and flat bone. Wooled to knees and hocks, clean below. Forelegs well filled with mutton	20
Belly; also Scrotum of Rams—Well covered with wool	5
Fleece—Moderately short; close, fine fiber, without tendency to mat or felt together, and well defined, i. e., not shading off into dark wool or hair	10
Skin—Fine, soft, and pink color	5
Total	100

The Dorset.

The native home of the Dorset horn is in the counties of Dorset, Somerset, and Wiltshire in Southern England. The present day Dorset is descended from the original sheep native to the foregoing counties. Improvement was brought about by careful and judicious selection of stock. The first importation was made to the United States about 1885.

The Dorset is supposed to be adaptable to either arable or plains lands, but thrives best where there is an abundance of foraging. It is a very prolific breeder, and a large number of twins are produced. The Dorset stands unrivalled for early lamb production. The ewes come into heat at most any season of the year, which is a strong point in their favor.

The Dorset lambs reach maturity at an early age owing to the fact that their mothers supply them with a very liberal quantities of milk.

The Dorset crosses well with other breeds, the cross-bred offspring possessing to a considerable degree the prolificacy and early breeding qualities acquired from the Dorset side.

As a mutton producer the Dorset is surpassed by the leading mutton breeds, but the flesh is of good quality. The quality of the early lamb meat is excellent.

*Suffolk Sheep Society Flock Book Vol. VII, 1893. England.

A Dorset Ram.

Scale of Points.

	Points.
Head—Neat, face white, nostrils large, well covered on crown and under jaws with wool	5
Horns—Small and gracefully curving forward rather close to jaw	5
Eyes—Prominent, and bright	2
Ears—Medium size covered with short white hair	2
Neck—Short, symmetrical, strongly set on shoulders, gradually tapering to junction of head	5
Shoulders—Broad and full, joining neck forward and chine backward, with no depression at either point (important)	15
Brisket—Wide and full forward, chest full and deep	8
Foreflank—Quite full, showing little depression behind shoulder	8
Back and loin—Wide and straight, from which ribs should spring with a fine circular arch	10
Quarters—Wide and full, mutton extending down to hocks	10
Belly—Straight on under line	3
Fleece—Medium grade, of even quality, presenting a smooth surface and extending over belly and well down on legs	12
General conformation—Of the mutton type, body moderately long; short stout legs placed squarely under body, skin pink, appearance attractive	15
Total	100

The Cheviot.

The native home of the Cheviot is among the hills and mountains in Southern Scotland and Northern England, where they have been bred for centuries. In its improvement, the Leicester, Black Faced Highland and, possibly some Merino blood, have been used. This

breed was first imported into the United States in 1838. It is well adapted to the high western range country.

The Cheviot as an early maturing sheep is fair, but having been developed in a section offering poor grazing it could hardly be expected to be in the front rank. However, it is improving in this respect under more liberal feeding. As a grazer it is unsurpassed.

The Cheviot should cross well with the range sheep, producing a lamb of good mutton quality and hardy. It shears a fleece of medium wool weighing from 5 to 8 pounds. Compared with the

A Cheviot Ram.

Southdown the Cheviot exhibits more size. It is adapted to more varied conditions, and produces a superior cross when hardiness is desired. The Southdown matures at an earlier age, and is superior for crossing.

Standard for Judging.

	Points.
General conformation and quality—Deep and full breast, and large through the chest. Back wide and straight with well sprung, deep ribs, legs well placed and leg of mutton full and thick. Body well fleshed; skin pink with no blue or dark coloring fleece; compact and medium fine, bone; strong and fine general appearance, graceful, symmetrical, active	20
Size—In good flesh when full matured a twenty-months'-old ram should weigh not less than 200 pounds and a ewe not less than 130 pounds	10
Head—Should be free from horns or scurs of any length. It should be medium length and broad with ample bredth between the eyes. Ears should be of medium length and usually erect when at repose. Head covered with clean white hairs, extending from nostrils to	

back of poll. Ridge of head from between eyes to nostrils straight or slightly arched in female and more strongly arched or roman in rams. Color of top of nose black..... 15

Body—Well proportioned, having notable depth, with thickness on top and at flanks; loins should be very broad and thick; shoulders should set well back and be smoothly covered; and crops be full and well arched. The rump should be long, broad and level..... 20

Legs—Sshould be short, well set apart and be covered with clean white hair, with no wool below hocks and knees. The hind legs should be flat and deep below hock. Pasterns should be strong and not show weakness, supporting body well..... 10

Feet—Symmetrical, squarely placed when in repose and hoofs black in color 5

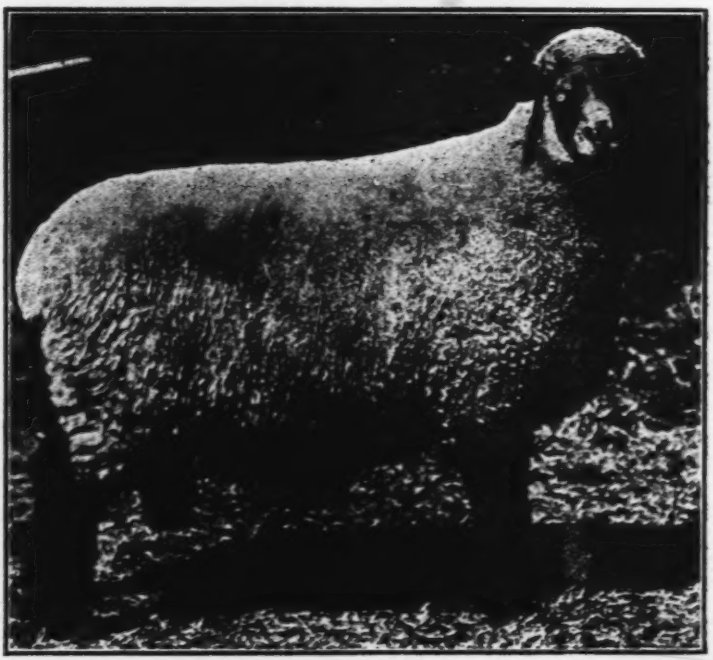
Fleece—Should cover the body completely to behind the poll and ears down to knees and hocks. Under part of the body should be well covered. In mature animals, should be not less than three inches long for annual growth and be compact and of medium wool class. Rams should shear at least 12 pounds and ewes 8 pounds when in mature form, to be desirable representatives of the breed..... 20

Objections.

Scurs on the head, flesh-colored skin about the nostrils, hair about the thighs or kemp on the body, reddish or sandy hair on head or legs, lack of wool on under part of body.

Disqualifications.

All male lambs shall be ineligible to registration, if having scure, or horns exceeding one inch in length.



A Tunis Ram.

The Tunis.

The native home of the Tunis is in Northern Africa. Its origin is buried in obscurity, as this breed is supposed to have existed in Northern Africa for centuries.

The Tunis was first imported to the United States about 1799. Its distribution at the present time is somewhat limited. It is adapted to a wider range of conditions than any other breed with the possible exception of the Merino. It reaches an early maturity, and feeds out well. It is considered as being a valuable sheep for early lamb production, owing to the fact that it can be bred at most any season. It is noted for its prolificacy. The Tunis produces a superior class of mutton, and is valuable for crossing on the fine wools when it is desired to breed for early lamb production.

The Tunis produces a rather coarse fleece of medium and sometimes carpet wool. This wool is rather variable in quantity and quality, as well as color. The average fleece weighs from 7 to 10 pounds. Compared with the Southdown, the Tunis produces inferior mutton.

Scale of Points.

	Points.
Blood	20
Constitution	15
Fleece	10
Covering	10
Form and tail	12
Head and ears	10
Neck	5
Legs	6
Size	6
General appearance	6

Blood—Imported from Tunis, or having a perfect line of ancestors extending back to the flock owned and bred by Judge Richard Peters of Belmont, near Philadelphia, who received his first pair from Tunis in 1779, and bred them pure for more than 20 years.

Constitution—Healthful countenance, lively look, head erect, deep chest, ribs well arched, round body with good length. Strong straight back; muscles fine and firm.

Fleece—Medium length, medium quality, medium quantity, color tinctured with gray, never pure white. Evenness throughout.

Covering—Body and neck well covered with wool. Legs bare or slightly covered; face free from wool and covered with fine hair.

Form and tail—Body straight and broad and well proportioned. Small bone; breast wide and prominent in front. The little end of tail should be docked, leaving the fleshy part fan shaped, or tapering; five or ten inches broad, six or eight inches long and well covered with wool.

Head and ears—Head small and hornless, tapering to end of nose; face and nose clean; in color, brown and white. Ears broad, thin, pendulous, covered with fine hair; in color brown to light fawn.

Neck—Medium in length, well placed on shoulders; small and tapering.

Legs—Short; in color brown and white; slightly wooled not objectionable.

Size—In fair condition, when fully matured, rams should weigh 150 pounds and upwards; ewes 120 pounds and upwards.

General appearance—Good carriage; head well up; quick, elastic movement; showing symmetry of form and uniformity of character throughout.

The Corriedale.

The native home of the Corriedale is in New Zealand. About fifty years ago some sheep breeding experiments were conducted on the Corriedale estate at Otage, South Island, by a man named James Little, who sucessfully laid the foundation for this popular breed. The Corriedale has only recently come to be regarded as a distinct breed.

Formerly nearly all of the sheep of New Zealand and Australia were Merinos, but Leicesters and Lincolns were finally introduced and crossed with the Merinos. The offspring resulting from this cross combined the best points of both long wool and fine wool breeds and at the same time, seemed well adapted to the varying soils and elevations.

The fleece of this new breed is a bright wool, spinning 50 S to 56 S; the wool possessing splendid spinning and felting properties. The best rams shear as high as 30 pounds and the ewes from 8 to 11 pounds. These sheep are hardy, adapting themselves to a variety

Corriedales.

of conditions. They are credited as being exceedingly prolific, producing lambs that mature very early. In New Zealand, many lambs are frozen at from three to four months and they then weigh from 30 to 40 pounds. A wether will weigh from 90 to 100 pounds dressed. It is claimed this breed has come to stay.

The Corriedale was first imported to America in 1914 and the Federal Government is at the present time beginning some experimental breeding with Corriedales.

The Corriedale unquestionably would thrive in Texas and it is hoped that this breed will be given a thorough tryout on the western ranges of this great state.

LONG WOOL BREEDS.

The Leicester.

The native home of the Leicester sheep is in Leicestershire County, England. In this county there formerly existed a large, coarse-boned, poorly fleshed slow maturing breed of sheep known as the

Dishley. These sheep were very ordinary, and along about 1755, Robert Bakewell, the world's greatest live stock improver, began the arduous task of improving this breed. Systematic in his work, Bakewell first secured the best animals available and later, when nothing superior to his own flock could be obtained, he is supposed to have resorted to line and in-breeding. As a result of Bakewell's work the Leicester has been reduced somewhat in size; a more symmetrical carcass has been developed; a better dressing percentage has been obtained, and maturity is reached at an earlier age.

There are two types of Leicesters, the Border and the English. The main distinguishing characters between the two types are that the Border Leicester's head is entirely free from wool, while the

Leicester Ram and Ewe.

English Leicester has bluish-white face and a tuft of wool on the forehead. The Border Leicester also possibly outweighs the English by a few pounds. The Leicester thrives best on low lying arable land where there is an abundance of foraging. It matures fairly early but has never become very popular in the country and should be given a more thorough test, as it doubtless has many favorable characteristics.

The Leicester produces a fleece of long lustrous wool weighing 9 to 12 pounds.

Scale of Points.

		Perfect score.
1.	Head—Long, moderately small, tapering towards the muzzle, white and well covered with hair; lips and nostrils black	6
2.	Nose—Somewhat narrow, almost straight in ewes, and slightly roman in rams	2
3.	Face—Having a wedge-shaped appearance, well covered with fine white hairs	2
4.	Ears—Thin, rather long, mobile and directed backward; a black speck on face and ears not uncommon	2
5.	Eyes—Large and prominent	4
6.	Neck—Strong and moderately short, level with the back and broad at the base where it leaves the chest, gradually tapering toward the head, being fine where head and neck join; neck straight from chest, showing a straight line from rump to poll	6
7.	Breast—Deep, broad and full	8
8.	Shoulders—Upright, wide across the top, giving good thickness through the heart	6

9.	Chest—Well filled behind the shoulder, with large girth	6
10.	Back—Broad and well fleshed, ribs well spring, loins wide, hips, level, quarters straight and long	12
11.	Barrel—Round, well ribbed home, straight lines above and below	10
12.	Legs—Of moderate length, fairly large and wide apart, with strong flat bone, covered with white hair; brown hair or spots objectionable	6
13.	Flesh—Firm, springy pelt, pink skin	8
14.	Fleece—Fine, uniform and sound in staple, curly, with good, bright luster and not dark hair or kemp; belly well covered	10
15.	Carcass—Rectangular; legs well set on, hocks straight, pasterns good with neat feet, good general appearance	12
	Perfection	100

The Lincoln.

The Lincoln originated in the county of Lincolnshire, England, and is the most popular of the long wool breeds in America today. Leicester blood was used in improving the old Lincoln. The first importation to America was made in 1796.

The Lincoln in its native home grazed on low lying lands pro-

A Lincoln Ram.

ducing an abundance of forage. In America it seems to thrive best on arable lands. When fed liberally the Lincoln matures early, making excellent gains, but where feed is scarce it does not thrive. It crosses well with the range sheep, the offspring having greater size and carrying exceptional fleeces of medium wool.

Well bred Lincolns shear from 10 to 15 pounds of long lustrous wool.

Scale of Points.

		Perfect score.
1.	Constitution—Body deep; back wide and straight; wide and full in the thigh; bright large eyes; skin soft and pink	25
2.	Size—Matured rams not less than 250 pounds when in good condition; ewes 200 pounds or over	10
3.	Appearance—Good carriage and symmetry of form	10
4.	Body—Well proportioned, good bone, good length; broad hindquarters, legs standing wide apart; breast wide and deep	15
5.	Head—Covered with wool to the ears, tuft on the forehead; eyes expressive; ears fair length, dotted or mottled in color	10
6.	Neck—Medium length, good muscle, good shape, well set on body	5
7.	Legs—Broad and set well apart, good shape, color white, but some black spots do not disqualify, wooled to the knees	10
8.	Fleece—Of even length and quality over the body not less than eight inches for one year's growth	10
9.	Quality of wool—Rather fine long wool, strong, lustrous fiber; no tendency to cot	5
	Perfection	100

A Cotswold Ram.

The Cotswold.

The native home of the Cotswold is among the Cotswold hills in Gloucester County, England. The sheep native to this county were folded in "cots" or "cotes" by night and during the day grazed upon the treeless hills termed "wolds." Sheep inhabited this district from time immemorial. The Leicester blood was used in the improvement

of the Cotswold, the size being somewhat reduced, but the quality increased.

The Cotswold was first imported to America in 1832. It thrives best on arable pasture lands where there is an abundance of succulent forage crops. When on a liberal ration Cotswolds mature at an early age. They are good feeders, but do not do well on ranges where grasses are scarce. For crossing with the Merinos this breed is probably not so popular as the Lincoln at the present time. The Cotswold produces from 10 to 14 pounds of long, lustrous wool.

Standard of Excellence and Scale of Points.

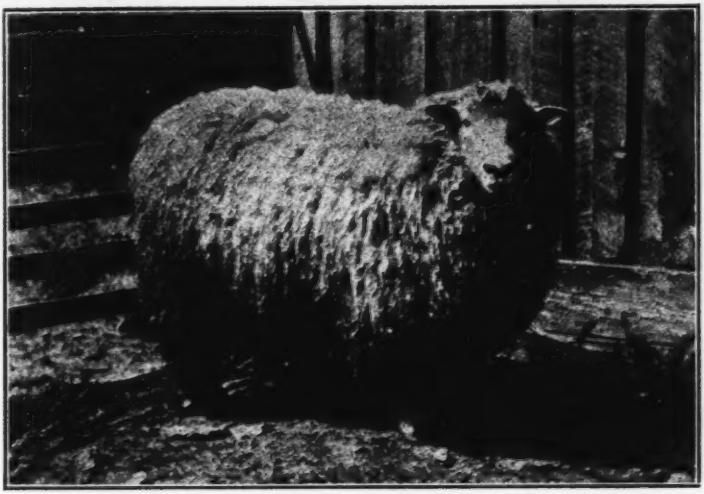
	Perfect score.
For Cotswold ram—Head not too fine, moderately small and broad between the eyes and nostrils, but without a short, thick appearance, and in young animals well covered on the crown with long, lustrous wool	8
Face—Either white or slightly mixed with gray, or white dappled with brown	4
Nostrils—Wide and expanded; nose dark	1
Eyes—Prominent but mild looking	2
Ears—Broad, long, moderately thin, and covered with short hair	4
Collar—Full from breast and shoulders, tapering gradually all the way to where the neck and head join. The neck should be short, thick and strong, indicating constitutional vigor, and free from coarse and loose skin	6
Shoulders—Broad and full, and at the same time join so gradually to the collar forward and chine backward as not to leave the least hollow in either place	8
Forelegs—The mutton on the arm or forethigh should come quite to the knee. Leg upright with heavy bone, being clear from superfluous skin, with wool to fetlock, and may be mixed with gray	4
Breast—Broad and well forward, keeping the legs wide apart; girth of chest full and deep	10
Fore-flank—Quite full not showing hollow behind the shoulders	5
Back and loin—Broad, flat and straight, from which the ribs must spring with a fine circular arch	12
Belly—Straight on under line	3
Quarters—Long and full, with mutton quite down to the hock	8
Hock—Should stand neither in nor out	2
Twist or junction inside of the thighs—Deep wide and full which, with a broad breast, will keep the legs open and upright	5
Fleece—The whole body should be covered with long lustrous wool	18
Total	100

The Romney Marsh.

The native home of the Romney Marsh is in Kent County, in Southwestern England, the land in this region being low and level and inclined to be marshy. The early type of sheep inhabiting this section was large and of a very poor mutton conformation. Improvement has been brought about gradually through better breeding. The Romney was first imported to America in 1904. Although, it has never been given a thorough tryout in this country, it is unquestionably well adapted to certain regions.

Description of Romney Marsh: Head wide, level between ears, which should be large and thick, and covered with fine hair or down; good thick foretop, no horns or dark hair on the poll which should be covered with wool. Eyes should be large, bright and prominent.

Face in ewes should be full, and in rams broad and masculine in appearance. Nose, in most cases, coal black. Neck should be well set in at the shoulders and strong and thick. Shoulders wide, well put in and level with the neck. Chest wide and deep. Back straight, with wide and fat loin. Rump wide, long, well turned. Tail set in



A Romney Ram.

almost level to the chine. Thighs well let down and developed. Legs should be short, with big bone, and large shapely feet of black horn. The fleece should be of dense, even quality, and of good, decided staple from the foretop to end of tail, and free from kemp. The skin should be of a clean pink color.

The Black-Faced Highland.

The native home of this breed is in the Highlands of Scotland, where they have been bred for more than a century. Their origin is buried in obscurity.

The Highland was first imported to America in 1861. It is a very hardy sheep, having been forced to withstand the severe winters in the Highlands of Scotland. It is an excellent grazer and apparently does well where the lowland breeds can not exist. It produces a superior class of mutton. The breed is rather small, probably due to the fact that it has not always had a liberal amount of forage available. The size ought to increase in this country under more liberal feeding.

The wool is long and coarse, weighing about 5 to 7 pounds in ewes.

A Black-Faced Highland Ram.

The Karakule.

The native home of the Karakule or Arabi is believed to be in the Khanate of Bokhara in Central Asia.

The Karakule was first imported to America in 1909 by Dr. C. C. Young of Texas, and placed upon one of his ranches in the northern part of the state.

The Karakule is a curious animal. At birth the fleece is black, but by the time maturity is reached the fleece has turned to gray. The color of the hair on the legs, face, and ears is black at birth and retains its brilliant lustre throughout life.

In crossing the Karakule ram with Lincoln ewes, the Kerakule characteristics seem to predominate. It is especially valuable because of the pelts of the young lambs. The wool of the young lambs curls together tightly in small ringlets and displays a beautiful lustre. The lambs having the best skins are killed at from one to three days of age and the skins are said to have a value of from $5 to $15 each. These skins are used in making fine coats for ladies.

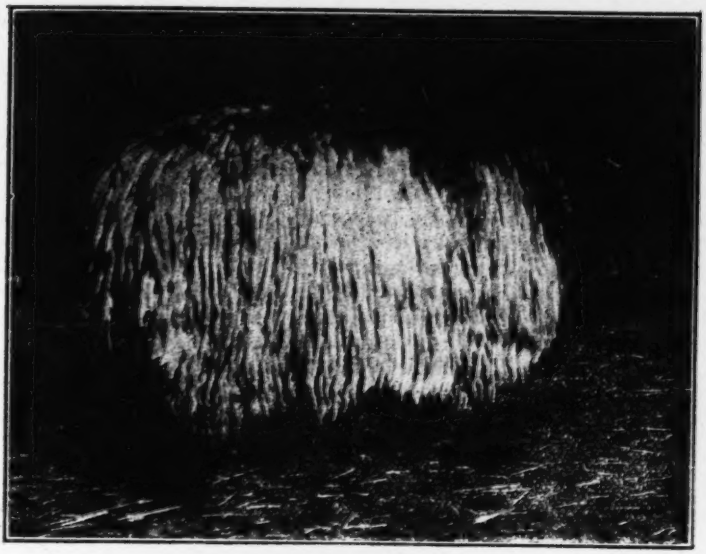
Mr. Albright of Dundee, Texas, has been crossing the Karakule on Lincoln ewes for a number of years and has produced cross-bred lambs, whose skins are worth from $3 to $15 each.

The claim is made that the Karakule produces a superior quality of mutton. They are a good hardy sheep and do well under Texas conditions.

HINTS TO THE BEGINNER

The beginner in sheep husbandry should make a thorough study of the types and breeds of sheep before he ventures into the business. Environment exercises a considerable influence on sheep. If the prospective breeder resides in a community in which large numbers of sheep are kept, he should study the situation and decide for himself which kind of sheep to buy.

Many beginners in sheep production ask the question, "What is the best breed of sheep for us to buy?" There is no best breed as shown by the fact that every breed has its admirers; and, again, different men handling different breeds, make money on their par-



A Karakule Ram.

ticular breed of sheep. In England, the land that has been so successful in the production of sheep, there are many breeds common to that country that we scarcely hear of in America. Some breeds are better adapted to certain soils and environmental conditions than others. Some breeds of sheep require an abundance of forage crops, while others will get out and graze on land that is not luxuriantly imbued by nature and make wonderful gains.

The long wool breeds are very large, and in England are found grazing on the lowlands supplied with an abundance of luxuriant feed. The medium wooled sheep are best adapted to pastures a little higher, while the Scotch Highland, Cheviot, and Welsh are found still higher in the mountainous region.

The beginner should select a breed of sheep that best suits his fancy, and then stick to it instead of switching from one breed to another every few years. It might be well to inform the reader that the consumer today demands a smaller mutton carcass than formerly. There is less waste to the smaller mutton and the small finished carcass sells at a higher price per pound than that of the larger sheep.

Some breeds shear heavier fleeces than others; therefore, the prospective grower should give some consideration to this point, as every pound of increase in weight of fleece means an increase of from 18 to 25 cents, according to the price per pound that the wool is worth.

From the standards of excellency of the leading breeds given in this bulletin, the amateur can form an idea as to the general type and constitution of the animals that he is keeping. Any breeder of live stock must keep an ideal constantly in mind in order to succeed as a breeder. The sheep breeder must become familiar with the anatomy of a sheep and he must learn to know a good sheep from a scrub.

IMPORTANCE OF SHEEP FARMING.

A number of our prominent farmers in Texas do not care to bother with a few sheep. They have even failed to recognize the sheep as an important factor in the improved farming operations in this section of the country. They forget that the sheep, regardless of care, returns more profit to its owner than do the other classes of live stock; they forget the sheep eats 90 per cent of all the noxious weeds that grow on the farm, while the other animals consume only about 50 per cent of them. The Texas farmer has not yet awakened to the fact that good mutton is one of the most palatable and digestible meats, and when he does partake of it he goes to the market and purchases a lamb carcass and pays about $10 for it. He does not realize that he has considerable pasture going to waste at home and that, if he only would, he could produce his own lamb at half the price he pays the dealer.

SELECTION OF A RAM

The ram should be a typical example of the breed that he represents. In other words, he should be a "typey" animal, type in this meaning style, conformation, and character. Type is a combination of distinct characters belonging to each breed. Type is not considered as always being of economical significance so far as a few individuals are concerned, but no matter how fine a specimen of an animal that a breeder may own, he need not compete in the show ring against other individuals of the same breed if the animal does not possess the breed type.

The sire should be carefully selected since, upon him, depends the entire female flock. The sire is often spoken of as being half the flock, which in reality is very true. A poor breeding ewe in the flock affects only a few, while the influence of a poor sire is felt by many.

The amateur sheepman should be a little skeptical about purchasing, for breeding purposes, animals that have been highly fitted for show, because on account of such a high degree of finish they often fail to breed, especially the first year. Before paying too high

a price for a sire the prospective buyer should examine some of his progeny, and determine to his own satisfaction whether he is good enough to head the flock. It is advisable to pay rather a high price for an animal whose merits are known rather than pay exorbitant prices for young, untried sires. In a ram the breeder wants masculinity, which character is exemplified by a broad, short face; nose strongly inclined to be Roman; neck strong and full; depth and breadth of chest; strong back; thick loin; rump carried out straight to tail; thigh full, twist deep; animal standing squarely upon his legs and covered with a growth of good, elastic wool that densely covers the entire body. He should be of good size, active and showing quality. A sire possessing prepotency powers is the individual that should be in greatest demand.

Ram lambs should not be used for breeding purposes, as it quite frequently happens that they are mated to too many ewes and later, when matured, they prove to be non-breeders. A ram may be used in the flock until he has reached a good ripe age. So long as the mouth does not become broken and his activity is retained he can be successfully retained at the head of the flock.

A ram that has been overfitted usually possesses rolls over the ribs just back of the shoulders. The prospective buyer should carefully handle the ram in order to determine his condition. Deception often results from the trimming of the wool on an individual. In this way many weaknesses are covered up by the shears and cannot be detected wholly by the eye. The hands are the eyes of the sheep judge.

SELECTION OF EWES.

In the state of Texas it is practically impossible to secure pure-bred ewes in large numbers, and this being true, it is recommended to the beginner in flock management to purchase a uniform lot of high grade ewes. These ewes should be bred to a pure-bred ram of desired type and the offspring resulting will show a marked resemblance to their sire. A marked improvement will be noted in the lambs over their dams. The ewe lambs should not be bred until 16 to 18 months of age.

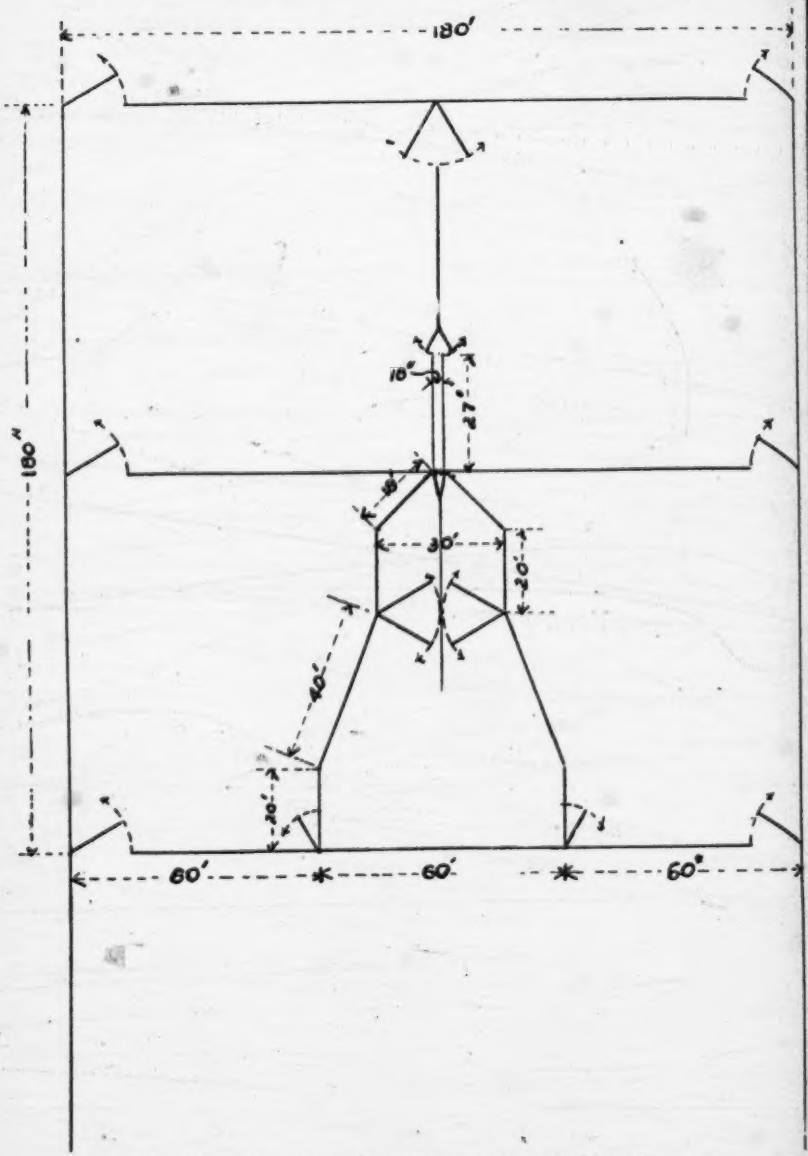
As the flock increases some culling will have to be done and the breeder should bear the following points in mind at culling time:

(1) The culling should be done before the breeding season in the fall, and those ewes that have not been good producers and did not supply enough milk to raise a good lamb should be eliminated from the flock.

(2) Broken mouth ewes (those with lost teeth) should be eliminated.

(3) Those with spoiled udders and the non-breeders should be sent to the shambles also. It would be well for the breeder to keep a watchful eye on the ewes while they are suckling their lambs and mark the ewe that does not raise a good lamb; then after the weaning sell such ewes that failed to produce good lambs. A ewe that has raised an exceptionally fine lamb may look thin and emaciated by weaning time. Such a ewe is one that returns a profit to the owner and she should, by all means, be retained in the flock. While type

should be kept in mind by all breeders, still a "typey" individual that proves to be a non-breeder should be disposed of, as all sterile animals are retained at a loss.



Large Sheep Corral Equipped With Hand-Cutting Chute.

WINTER MANAGEMENT OF THE FLOCK.

Owing to the mild open winters in Texas the problem of winter management of the flock is comparatively simple as compared with problems confronting the Northern farmers.

The Texas farmer has a tremendous advantage over the Northern grower in the fact that his sheep under proper management on the Southern farm are enabled to feed on green forage crops throughout the entire winter period. The Northern sheep grower finds it impossible to supply green foraging through the long winter months on account of the severe winters.

Every person who has given any thought and study to live stock production is satisfied that they are carried at much smaller cost while grazing in the pastures than when housed and supplied with hay and concentrates.

The Texas farmer does not have to provide such expensive barns or sheds as are necessary in the North. It is advisable, however, for the farmers to give the flock access to sheds during the cold and penetrating winter rain storms. Sheep can withstand low temperatures without any ill effects so long as they are kept dry, but a wet sheep exposed to the cold penetrating "northers" often succumbs. Many of the Texas farmers have out-buildings under which small flocks might seek shelter during wet weather. The main point to keep in mind is to provide a roof that will shed water and a dry floor underneath.

When erecting sheep-sheds always bear in mind to locate the building on a high, well drained piece of land. The open front should be of a southern exposure. In figuring the size of the sheep-shed to be built an allowance to ten to twelve square feet of space is made for each sheep.

The accompanying chart on page 64 shows a list of popular forage crops that can be successfully grown in Texas. Those who are interested in producing forage crops for sheep, but who desire more information as to the best crop to plant, are advised to write to the Texas Experiment Station, Division of Agronomy, College Station, Texas, for full information.

A number of farm flockmasters in Texas do not find it necessary to supply the pregnant ewes with dry concentrates (feeds high in protein constituents) during the winter months. These farmers, however, allow the flock to graze on the winter wheat and they go through winter in good condition. Where no green crops are accessible it is a good plan to supply the flock one to two pounds of silage per head daily. The silage adds tone to the ration. It is not essential to supply the breeding flock with silage when it has access to a good green winter forage crop. Where only roughages that are lacking in protein are available, one-half to three-quarters of a pound of raw cottonseed is often added to the ration to good advantage. The amateur sheepman should bear in mind that it is not essential to carry the breeding flock through the winter in a fat or finished condition. All that is necessary is to have the flock in a good thriving condition. If too much succulent feed, such as silage, is provided, the lambs are likely to be sluggish and weak at the time of

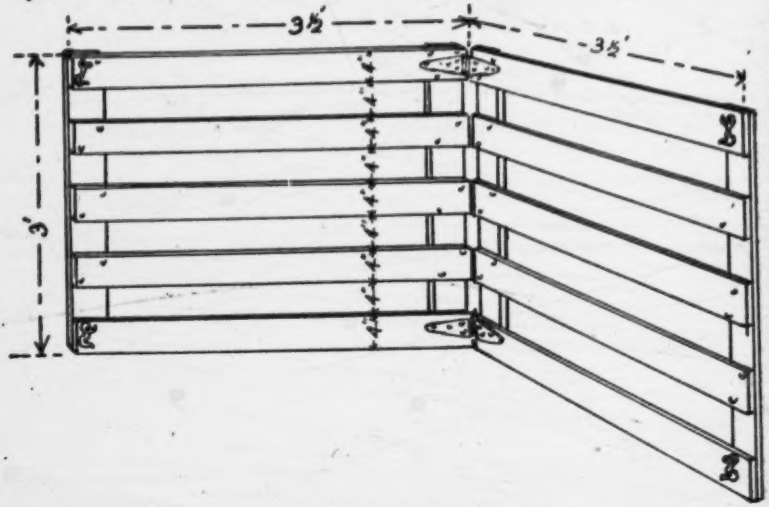
birth. Again, if feeds such as cottonseed meal, oats, and alfalfa, which are high in protein, are supplied for any length of time prior to lambing, difficulty at parturition is likely to be encountered in some instances, owing to the fact that such feeds cause the young *in utero* to reach an enormous development. Alfalfa hay of good quality is high in its protein content, and when the pregnant ewes are supplied with such hay it is not necessary to add rich concentrates such as cottonseed or cottonseed meal.

If the breeding flock has been running on common pasture during the winter, and is only in fair condition, it is well to gradually work it to from one-half to one pound per head of one of the following grains daily: threshed oats, ground milo, feterita or kafir. If these feeds are not available one-quarter of a pound of cottonseed cake, or one pound of raw cottonseed can be added to a good advantage.

Succulent feeds increase the milk production, hence it is advisable for the smaller farmer to provide a winter forage crop.

LAMBING TIME.

Lambing time is the shepherd's harvest and business season, and it depends largely, if not entirely, upon the care and attention given by him whether or not the lamb harvest is successful. The true and



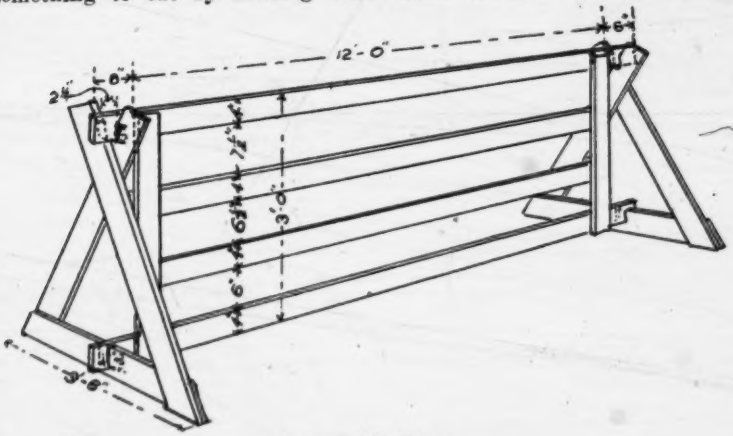
A Lambing Hurdle.

faithful shepherd practically lives in the fold at lambing time, and in case any difficulty arises in parturition, he offers valuable assistance and often saves several valuable ewes and young lambs that otherwise would likely perish.

Most satisfactory results are obtained when lambing pens are provided. If the flockmaster has only limited space and can not afford permanent pens, satisfactory pens about four to six feet square, made

by hinging two hurdles together and placing in a corner of the pen, can be cheaply and quickly made.

It is especially desirable to place ewes having twins in such pens for a few days because one of the lambs often wanders from its mother when, with a large flock and after a short absence, the mother frequently refuses to own the little creature upon its return. Some weak lambs generally make their appearance in every flock, and these are the ones that the shepherd must watch and patiently assist in getting something to eat by holding their heads to their mothers' udder,



A Portable Fence.

thereby helping them to get their first taste of milk. This may have to be repeated several times, depending entirely upon the physical condition of the lambs. Lambs frequently experience a difficulty in finding the teats owing to the long wool surrounding the udder, and it is very important that the shepherd examine every ewe and use the shears to cut away surplus wool about the udder. This will enable the lambs to feed with greater ease, and they are less apt to become victims of "wool balls" in the stomach, a condition that often causes death to young lambs.

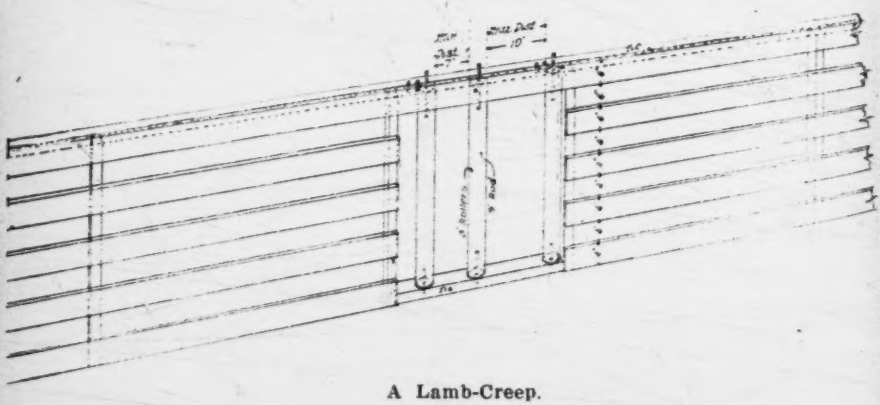
When an apparently lifeless lamb is born the shepherd can often save the little fellow by removing the phlegm or membrane from the mouth and nose. Then by opening the mouth and blowing into it, he can very often start respiration and in a few minutes the apparently lifeless lamb will be on its feet.

It often happens that during cold weather the young lamb is accidentally or through carelessness dropped out of doors and is found in a thoroughly chilled condition. The best treatment to offer in this case is to take the lamb to a warm room and bathe it for a few minutes in water as hot as the hand can comfortably stand. Afterward remove and rub dry with a cloth, then wrap in a cloth and place near a stove until dry. When dry help the lamb get some milk from its mother. If it is not inclined to suck, and seems to be rather dull, give a teaspoonful of gin or whisky in a little warm water. This will stimulate the nerves somewhat and may save its life.

When it so happens that a ewe loses her lamb, a twin lamb should be taken from another ewe that is not producing enough milk to properly support two, and placed with her behind a lambing hurdle. Perhaps the most satisfactory method of getting the ewe to own the adopted lamb is to tie the skin of her deceased lamb on the back of the adopted youngster for a few days. Ewes know their lambs largely by scent and this method is very effective.

The newly lambed ewes should be fed but very little grain for a few days after lambing, as too much concentrated feed suddenly forced upon them is apt to cause milk fever. The ewe with a suckling lamb consumes considerably more hay than the dry ewe and the shepherd should after a few days feed liberally.

The lambs should be docked and castrated when from four to eight days old. Lambs begin to nibble hay and grain when from ten days to two weeks old, and if the owner wishes them to do their best, he should provide a creep for them and feed some oats, bran, oil meal, and some choice alfalfa hay.



A Lamb-Creep.

Disinfect all the lambing pens thoroughly before lambing season so as to avoid contagious diseases. If the dreaded navel disease occurs in the flock wash affected parts thoroughly five or six times daily with warm water containing 1-1000 parts mercury bichloride and some castile soap. Wash the navel cord of all newly born lambs with some disinfectant as a precaution, because it is supposed the germs enter through the end of the cord shortly after birth. Some shepherds wash the navel cord in a coal tar solution and quite successfully; others recommend an application of tincture of iodine.

CASTRATING.

All sheepmen do not agree as to the best age at which to castrate young lambs. Some shepherds make it a practice to perform this operation at from five to ten days after the lamb has been dropped, while others defer the operation for several weeks, and often for a month or two. The senior writer has castrated lambs from three days up to four weeks of age, and his observations have been that

this operation can best be practiced on the young healthy lamb lamb along about the fifth to eighth day after being dropped. It is best not to allow the lambs to get too old before castration because after they reach from two to three weeks of age the operation proves more painful and severe. The senior writer has observed young lambs three to five days old playing and romping the next day after castration.

The lower third of the scrotum is severed by means of a sharp knife, the testicles removed by an instrument especially prepared, by the fingers, or pull out by means of the teeth. The latter method is most widely practiced by the large flockmasters owing to the greater rapidity with which the work may be done by this method. Select a fair day for the operation and one that is not too hot. Under farm conditions a disinfectant should be used as a matter of precaution. Use a one per cent coal tar solution; a one per cent lysol solution, or a mixture of turpentine immediately following the operation.

When one desires to castrate a mature ram, the simplest method is to sever the scrotum by means of the hot searing tongs. By this method there is no loss of blood.

DOCKING OR DETAILING LAMBS.

During recent years a great deal has been written in the way of suggesting how to detail lambs. Many present day writers advocate the use of the hot searing pinchers for the performance of the opera-

Docking Lamb.

tion. The strong point in favor of the searing iron is that the lamb loses less blood than in instances when the tail is severed with a knife.

The senior writer is strongly in favor of detailing with the knife. The operation can be performed much more quickly by the use of the

knife, and when lambs are not more than four to eight days of age at the time of detailing the loss of blood is slight. The senior writer is of the opinion that the knife wound creates less pain than the hot iron wound, and that healing will take place more rapidly, although, according to investigations conducted in New South Wales,*

Docking Lamb.

there was not a great deal of difference in this respect. Detailing by means of the knife may be done as shown in the accompanying cuts.

SUMMER MANAGEMENT OF THE FLOCK.

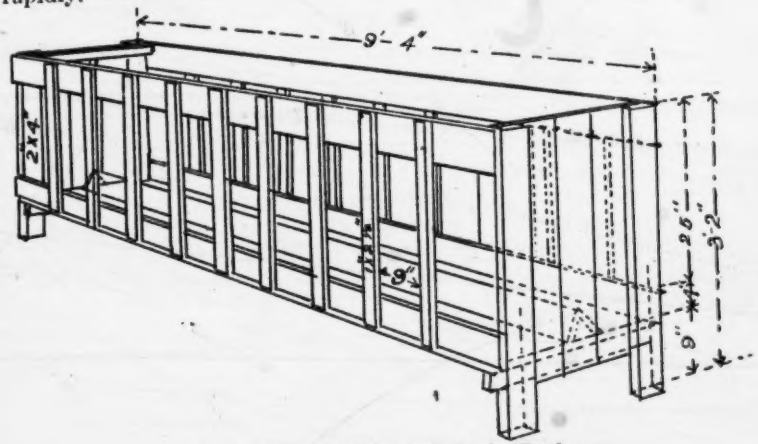
The flock should have been shorn and dipped before being turned out to the summer pasture or range. It is economy to shear in the spring time, because if this operation is deferred until too late a date much wool will be shed and lost.

*Agricultural Gazette of New South Wales, Misc. Pub. No. 1577.

Rotation of pastures should be practiced as a precaution against internal parasites. If the pasture can be partitioned off into several separate fields or enclosures, without involving too much extra expense, it should be done by all means. The primary object is to change the sheep to a fresh pasture every week or ten days during the hot summer months. By following a plan of this character, a healthier flock is maintained.

A "lamb creep" is a small opening through which young lambs can easily pass, but so small as to preclude the entrance of the mature sheep. This "creep" might open either into a small lot where grain can be supplied to the lambs, or into a field sown to rape, wheat, barley, or some forage offering an abundance of tender grazing for the young growing lambs.

The flock owner who provides extra feed for the lambs is sure to be well repaid for feed thus consumed. When the lambs are fed grain in the same troughs as their mothers they cannot get their share owing to the fact that the mature sheep consume the grain so rapidly.



A Combination Hay and Grain Rack.

The feed troughs should be so constructed as to keep the lambs out of the trough. The young lambs delight in climbing into troughs and feed racks, and in so doing they trample over the feed and afterwards refuse to consume it. Sheep, above all the domestic animals, are particular not to eat foul or tainted feed.

The lambs will be a bit timid about entering the creep the first few times, but after they learn that there is some good grain awaiting them in the troughs inside the creep they will run into the small enclosure at frequent intervals. During the first few times the shepherd should catch the lambs and place them inside the creep, closing the entrance for half an hour or so. In this way the youngster will soon find the grain and begin to nibble at it.

A mixture of oats three parts, cracked corn two parts, and bran one part forms an excellent concentrated feed for the young lambs.

In Texas, where there is an abundance of milo, feterita and kafir, any one of these threshed grains can be advantageously mixed with cottonseed meal in the proportion of six parts grain to one part meal and feed to good advantage.

DIPPING SHEEP.

In order for the sheepmen to successfully overcome the ravages of the dreaded external parasites that infest the flocks of the state, they must dip their flocks at least once every year. If a farmer has a small flock that is apparently free from external parasites, he should, as a precautionary measure, dip the flock shortly after shearing time. One dipping will suffice where there are no scab mites or lice, but in case these parasites are present two dippings about three weeks apart will be necessary. Aside from destroying external parasites the most common sheep dips are believed to have a soothing effect upon the skin, which seems to stimulate the small glands or follicles at the base of wool fibres and the growth of the wool is promoted.

Some flock owners are opposed to dipping the apparently thrifty flock, believing, in the first place, that it creates an unnecessary expense; and, secondly, that the dipping seems to set the animals back for a period.

Every sheepman should dip his flock as a precautionary measure, the expense of dipping being small. In the second place, if a man has always had a flock free from scab and lice, it is much easier to continue in such a way rather than to allow the flock to become infested through negligence, because once a flock on the place becomes infested, there is no telling when the infection will present itself in the future. Every sheep owner or prospective owner should make a hard and fast rule to dip all sheep before they are brought to the ranch or farm and given access to the farm lots, sheds, and pastures.

DIPPING VATS.

For a small farm flock of from ten to twenty head, a good sized wash tub may be used with entire satisfaction. Each sheep is lifted into the tub, one at a time, and placed on its side and so held under the dip from one to two minutes; but where a larger number is kept the owner should purchase a small galvanized iron dipping vat. Such vats are for sale by sheep-supply houses, or one can be easily made by a good tinner of your home town.

A small galvanized iron tank four feet deep, three and one-half feet long at the bottom and ten feet long at the top, and twenty to twenty-four inches wide at the top and ten inches at the bottom, will answer admirably for the dipping of a few head up to one or two hundred.

Larger vats should be constructed by large flockowners. Concrete vats are coming into quite common use at the present time, and they can be constructed of any size, depending upon the plans of the owner. Some flock owners construct vats of matched lumber and with success. The corners and cracks are filled with pine tar and hence they are quite easily made water-tight.

DIPS.

There are two common classes of dips on the market—the proprietary and the non-proprietary.

The first class comprises those dips whose contents are unknown to all except the manufacturers. The second, or non-proprietary dips, are those whose formulas are known, and, in addition, the methods of preparing them.

The United States Government is slow to recognize those dips whose ingredients are unknown.

Government Approved Dips:

1. Lime and sulphur dip.
2. Tobacco and sulphur dip.
3. Coal tar dips—when used according to approved formulas.

Lime and Sulphur Dip.

Fresh quick lime	8 pounds.
Flowers of sulphur	24 pounds.
Water	100 gallons.

Slake the lime to the consistency of a thin paste by the addition of a small amount of water; sift the 24 pounds of sulphur into the lime, stirring well; add about 25 gallons of water and boil for an hour and a half to two hours, stirring frequently for a period of several hours. Then drain the clear liquid from the vessel and add enough water to make 100 gallons.

Tobacco and Sulphur Dip.

Good tobacco leaves	21 pounds.
Flowers of sulphur	16 pounds.
Water	100 gallons.

In the preparation of this dipping solution soak the tobacco leaves in a solution of lukewarm water for a period of 24 hours, a covered vessel being used. Finally bring the solution to the boiling point for a minute; then allow to cool for several hours. Make a thin paste by mixing the flowers of sulphur with fresh water; strain the tobacco mixture under pressure; add the sulphur and pour into the vat. Add enough water to make 100 gallons. The dip must contain seven one-hundredths of one per cent nicotine in order to receive the governmental approval stamp.

Coal tar dips: The operator should follow directions closely in preparing proprietary dips. Before using a dip whose merits are unknown to you write to your Experiment Station at College Station, or to some well informed sheepman in an effort to secure the desired information. The average sheepman cannot afford to waste time and money on untried dips.

Emulsifying Coal Tar Dips.

The oils which form about 75 per cent of the coal tar dip are insoluble in water. When the dip is mixed with warm, soft water, the soap that is present in the dip is dissolved, and this in turn emulsifies the oil and a so-called "milky" solution results.

In many parts of the West the water contains a considerable amount of calcium sulphate or gypsum. When such a condition prevails, the insoluble oils are not broken up in small globules and held in suppension throughout the liquid, and instead of a white milky solution, there is a dark muddy solution resulting. The oils come to the surface of the water in many instances, and the first animals that are subjected to the dip, receive a coating of almost pure oil, and this being true, losses are likely to be quite severe. When using the coal tar dips be sure to have noted the character of the water before preparing the dip. Permanent hardness in water may be recognized by the action when sal soda (sodium carbonate) is added to the water as:

Caso 4 plus Na 2 Co 3 plus water$_3$ plus Na 2 So 4 plus water.

Correction Water: "In every case where lime is used for correcting water, follow it with the addition of 1/5 grain of soda ash or ½ grain sal soda for each grain of lime used in order to remove any soluble lime compounds remaining in the water."

"When it is impracticable or inconvenient to apply the tests suggested, almost any water supply can be corrected by the following treatment: For each 500 gallons of water to be used dissolve two pounds each of lye and soda ash (or 5 pounds of sal soda) in two gallons of hot water, and stir this solution thoroughly with the water in the vat. Allow at least one hour for the chemicals to act before adding the dip. To insure a proper mixture of the dip, it should be mixed with an equal quantity of water before being poured into the vat. The reason for this is that if the undiluted dip is poured into a large quantity of water there is a tendency for it to carry to the bottom. It is then difficult to obtain a satisfactory solution unless there are exceptionally good facilities for stirring the entire contents of the vat."

"Almost every ingredient commonly found in water can be removed by one of the methods described above. Waters which have had their foreign ingredients removed by the foregoing treatments are corrected for practically every purpose, since the methods described are designed to eliminate these substances as completely as the best boiler compound will do it. No more efficient substances than those described are available for removing the scale boring ingredients of water or to improve it for washing purposes and for diluting dips and disinfectants."

DETERMINING THE CAPACITY OF VAT.

In discussing the capacity of dipping vats the following is quoted from the U. S. Department of Agriculture Farmers' Bulletin No. 603:

"There is an old, much used rule for obtaining the capacity of a dipping vat which, though somewhat inaccurate, possesses the marked advantage of being easily grasped and therefore of not being liable to error in its application and of being readily worked out independently, if partially forgotten. This approximate rule for the present purposes may be stated as follows: Multiply the average length by the average width, the product by the depth, and this product by 7½.* The rule may be expressed as follows:

*Number of cubic feet per gallon.

$$\frac{\text{Top length} + \text{bottom length}}{2} \times \frac{\text{top width} + \text{bottom width}}{2}$$

$\times$ depth X7½=approximate gallons capacity."

An excellent rule to follow is to measure the water that is placed into the vat. For example, if the vat has a capacity of 500 gallons, place marks at the point reached by 200 gallons, 300 gallons, 350 gallons, 400 gallons, and 500 gallons respectively. This done carefully once, there need never be any doubt as to the actual capacity of the vat.

TRIMMING THE SHEEP'S HOOFS.

The hoofs of the sheep should be examined carefully at least once a year and those in need of trimming attended to. The best tool to use for this purpose is a small pruning shears.

Such a tool may be secured at most any of the larger hardware

Trimming Hoof.

concerns for about one dollar. When the hoofs are not trimmed they grow long, thus allowing sand or other small particles to lodge in the hoof and often crippling the sheep. Where the sheep are run on low, wet ground, lack of attention to the hoofs is apt to result in an occasional case of "foot-rot" which will cause the sheep owner a great deal more trouble than trimming the hoofs to prevent it.

In trimming the hoofs of a sheep gently set the sheep on its rump and hold as seen in the accompanying illustration. After the hard edges have been removed by means of the pruning shears, the hoofs may be given a neater finish by a trimming with a sharp pocket knife.

KEEPING THE SHEEP HEALTHY.

A Good Whitewash Disinfectant for Inside Walls.—All the buildings occupied by sheep should be thoroughly disinfected after there has been an epidemic of some kind within the flock. This disinfectant is best applied by mixing it with lime and applying in the form of a whitewash. The whitewash used and recommended by the Government is prepared as follows:

Take one peck of lime slaked in boiling water and kept just covered by the water while slaking; strain through a coarse cloth; add two parts of fine salt dissolved in warm water, one pound of rice meal or ground rice boiled in water to a thin paste, one-fourth pound of whiting and half a pound of glue dissolved in warm water. Mix all thoroughly and let stand covered for two or three days, stirring occasionally. Before using heat the mixture, and after it is hot stir in half a pint of crude carbolic acid to give it disinfecting properties.

Occasionally a contagion in some form or other may appear in the flock shortly after the buildings have been thoroughly whitewashed and the pens disinfected. In such a case a disinfectant in the form of a spray should be applied to the walls, posts, and fences around the lots. In addition the floors of the buildings should be cleaned and sprayed.

The ordinary coal tar dipping preparations are used quite extensively for disinfecting purposes and with success. Where disease has prevailed, it is an excellent precaution to sprinkle the floor and walls of the sheds just prior to lambing, and, in addition, several times during the lambing season. Such a precaution may entail a saving in the end.

FITTING SHEEP FOR SHOW.

Before starting to fit his breeding flock or portion thereof for show purposes the amateur breeder and fitter should become thoroughly familiar with the breed type and conformation of the sheep he is handling. In the first place the breeder should make certain that all the sheep that he intends to exhibit in the pure bred classes are properly registered, and that the certificates can be produced, because most fair associations make the provision that the judge can call for registry certificates. Once in a while grades are shown in pure-bred classes, but this is a practice not to be encouraged, as such methods will be surely discovered sooner or later.

In showing a mutton sheep mutton conformation is desired. The animal must possess the type characteristic of that particular breed. For example, in the Shropshire we want a sheep possessing the typical Shropshire head; there must be no horns or scurs on the Shropshire, as the best specimens are without them. Good judges will place Shropshires possessing scurs at the bottom of the class. In every mutton sheep, no matter what breed, the desired points are the clean cut head denoting quality; short thick neck; length of body; wide thick loin; strong back, carried well out to tail-head; thighs well filled, and wide, low in twist; straight underline, and fine dense fleece.

There can be no set rule as to the proper time to start fitting breed-

ing sheep for show purposes. It depends upon the keenness of the competition, the condition of the sheep at the beginning and also the ability of the owner or shepherd to fit sheep.

In fitting for exhibition at our largest shows considerable time is taken for this purpose, the period generally extending through the summer and early fall months.

If the breeder is planning on showing breeding ewes at the fall fairs the lambs should be weaned early, so that their mothers can be rounded into good condition. The ewes will not make satisfactory gains while suckling their lambs. "Flushing the ewe" is a common word amongst sheepmen, and it means nothing more than putting the ewe on a good feed and bringing her into good condition before being bred again. Rape is an excellent food for bringing about this result, and no sheep grower should be without a rape patch. Some grain can be fed to advantage in fitting the breeding flock for show but the flockmaster must be careful not to bring about the desired result in too short a time, as some of the members are quite likely to become soft and flabby, which is a very undesirable condition, judging from the breeders point of view. The fitter should handle his sheep and note any indications of over-fitting. One of the first indications of a condition of over-fitting is the softening and puffing up or swelling of the flesh over the ribs, just back of the shoulder.

A limited grain ration will help to make a wonderful improvement in the condition of the breeding flock. The most common concentrated feeds used for this purpose are oats, bran, oil meal, and ground corn. The latter is heating and should not be fed but in very meagre quantities during the hot summer periods.

In bringing the lambs into show condition the same general suggestions as were applied to the breeding ewes may satisfactorily be followed in this case. The lambs in order to do their best must be kept in good condition from birth. They should be given access to a good rape patch early in the summer, and, in addition, be fed a limited ration of oats, bran, and oil meal.

It will not be difficult to fit the rams for show if they have the run of a good pasture. A small amount of grain may be added to their ration a few weeks before the first fair if they are not in good show condition. Remember that the rams should be in a good, strong, thriving condition, but should not be overfat, sluggish and barely able to move. In the ram, an active and strong specimen is desired. In bringing about this condition the show sheep must all receive the proper exercise or else their flesh will become soft and bunches or rolls will develop on the sides, indicating over-fitting.

Wethers which are fitted for show are supposed to be finished and ready for the block. A somewhat more lengthy period is required for fitting this class, but the general principle is the same. Exercise is essential and the added flesh should be firm and evenly distributed.

The shepherd should handle his flock gently at all times and they will always come at his gentle call rather than run when they see or hear him.

The show sheep should be handled before being put in the show-ring because the quiet sheep, which stands with all four feet directly under it and with the head carried well, will offer a much more

pleasing general appearance to the judge than the one standing with its legs outstretched and continually in an effort to free itself from the attendant. Then, again, the weak points are much more in evidence when the animal is standing in an unnatural position.

Explanation of some common terms relating to drugs and their uses.*

Anesthetics.—To deprive of sensation and suffering.

Anodynes.—To diminish pain.

Antiseptics.—To prevent, arrest, or retard purtrefaction.

Antispasmodics.—To prevent or allay cramps.

Aromatics.—Strong smelling stimulants which dispel wind and allay pain.

Cathartics.—To freely open the bowels.

Disinfectants.—To destroy infecting matter.

Diuretics.—To increase the secretion of urine.

Febrifuges.—To counteract fever, lower temperature.

Laxative.—To gently open the bowels.

Narcotics.—To allay pain and produce sleep.

Purgatives.—To freely open the bowels.

Sedatives.—To depress nervous power or lower circulation.

Stimulants.—To temporarily excite the nervous or circulatory system.

Stomachics.—To improve digestion.

Tonics.—To gradually and permanently improve digestion and nutrition.

Vermifuges.—To kill and expel worms.

ADMINISTRATION OF MEDICINE.

Anodynes, antispasmodics, narcotics, sedatives and stimulants should be repeated once in every four to six hours in order to get the best results. Purgatives should be administered only when necessary. Sheep may receive a second dose of physic in twelve to sixteen hours.

No medicine should be administered until sufficiently diluted to prevent irritation.

THE NORMAL SHEEP.

Pulse beats—70 to 80 per minute.

Body temperature—101° to 103° Fahrenheit.

Respiration—12 to 20 times per minute.

*Farmers' Veterinary Adviser-Law.

THE SHEEPMAN'S MEDICINE CHEST.

Some Things to Bear in Mind.

Apothecary weights:

For Solids.	Symbol.
1 grain	gr.
20 grains=1 scruple	℈
3 scruples=1 dram (or drachm)	ʒ
8 drams=1 ounce	℥
12 ounces=1 pound	lb
For Liquids.	
1 minim	m
60 minims=1 fluid dram	f3
8 fluid drams=1 fluid ounce	O
16 fluid ounces=1 pint	Qt.
2 pints=1 quart	G
4 quarts=1 gallon	

Medicinal Doses: In administering medicines to an animal always be sure that the size of the dose is correct before administering, as there are many drugs used for medicinal purposes that must be administered in specified amounts, or else there is danger of severe injury or loss of animals.

PROPORTIONAL DOSE.

A sheep will take about one-third as much as a horse.
A minim is approximately equal to a drop.
One teaspoon holds about one fluid dram.
A dessert spoon holds about two drams.
A tablespoon holds half a fluid ounce.
The ordinary glass or tumbler holds half a pint.
Teacups hold from six to eight ounces.

GRADUATION OF DOSE FOR SHEEP.

Mature	1 part.
6 to 9 months	½ part.
2 to 6 months	¼ part.
1 to 2 months	⅛ part.

A sudden rise or fall of several degrees in temperature is regarded as serious.

Simple Treatment for Some of the Common Sheep Ailments Encountered on the Farm.

Sheep that receive proper care and attention are much less liable to suffer from disease than those that are neglected. When a member of the flock becomes ill and the shepherd does not seem to be able to diagnose the case it is best to let it alone. Experience has taught that it is unwise to treat sheep when symptoms are lacking. The animal should at first be given a change of feed and if the normal condition is not again shortly resumed, something is wrong. A skilled

veterinarian should be called to treat serious ailment. It may prove expensive at first, but very often saves in the long run.

A Drench for Sheep. It is occasionally advisable to administer a laxative or a purgative. For slight disorders administer one of the following:

(1)	Mature sheep	4	ounces raw linseed oil	Laxitive.
	Lamb two months.....	1½	ounces raw linseed oil	
(2)	Mature sheep	4	ounces epsom salts	
	Lamb.			
(1)	Mature sheep	4	ounces castor oil	Puragative.
	Lamb 1 week old.....	1	teaspoonful castor oil	
	Lamb 1½ months old.....	1	ounce castor oil	

Drenching a Sheep: There are two methods of drenching a sheep:

(1) Setting the sheep on its rump and administrating the medicine.

(2) Administering the medicine to the sheep while it is in a standing posture. A small long necked bottle with a capacity of about four ounces should be used for drenching purposes. The neck of the bottle necessarily needs to be long so that the sheep cannot place its tongue against the opening in the bottle, thus keeping the contents from flowing out. Care must be taken not to pour the liquid out too fast, as it is apt to get into the windpipe and strangle the sheep.

GRUEL FOR SICK SHEEP.

Sometimes a sheep gets quite sick and is off feed for a number of days. In such cases, a gruel made either of oilmeal or oatmeal is better than anything else to administer. To make oilmeal gruel pour the meal gradually into boiling water, continuing the stirring. Mix to the consistency of thin porridge and allow it to boil for about one minute. Administer one-half to one pint at a time by means of the drench bottle.

EXTERNAL PARASITES.

Parasites such as the common sheep tick, the scab germ and occasionally the louse, must be dealt with on the average sheep farm. Of these organisms the tick and the louse are the most common in this section, and if the owners resort to an annual or semi-annual dipping of the flock there need be but little suffering due to these pests. When the flock is not dipped at all during the year, if there happen to be a few external parasites on individual animals here and there, many months will not lapse before the pests raise havoc with the flock owing to the rapidity of their propagation.

A sheep covered with ticks is continually having its vitality sapped from its body owing to the fact that the ticks pierce the skin and feed upon the blood. Besides the great loss of blood much pain and suffering is caused. Dipping is the only means by which the sheep tick can be exterminated. The best time to dip is after shearing, because less dipping fluid is needed and the work is done more effectively. If the ticks are numerous it will pay to dip again in about

three weeks in order to kill the "nits" that are hatched after the first dipping.

The small flock owner can purchase a 200 gallon galvanized iron tank at an approximate cost of $10. The tank should be placed in the ground at the dipping period and removed after the operations have been finished so that it will not rust or corrode. The hole that was dug for the tank should be filled after the tank has been removed so as to avoid live stock stepping into it.

After emerging from the dipping vat the sheep should be permitted to stand for a few minutes on a draining platform sloping towards the vat, so that some of the dip preparation may run back into the vat. If this practice was not adhered to the sheep that have not been shorn for a long time would carry much of the fluid away, thus causing much waste. When dipping for ticks the dipping preparation should be heated to a temperature of about 110° Fahrenheit, or hot enough so that the hand and arm can be held in the liquid without discomfort. The sheep should be held in the solution for one minute and then given some assistance in leaving the vat. The entire body should be immersed in the dipping solution, the head also being pushed underneath the surface of the water for a second. The best way to do this is to place one hand over the nose and mouth of the animal and then with the other hand push the head down into the water. By pursuing this method there is no donger of the sheep swallowing or inhaling any of the solution.

SCABIES OR SCAB.

The common scab mite (psoroptes communis) is the most dreaded enemy of the sheepman, especially the western grower. This dreaded parasite bites the skin of the otherwise healthy sheep and lives on the fluid which is secreted, due to the irritation caused by the mite. The first symptoms noticed are that the sheep is seen rubbing against feed racks and posts, or scratching itself with the hind legs and biting or pulling on the wool at the parts where the irritation is caused. On infected parts of the animal there is first the exudation of a yellow greasy layer; crusts form and upon being rubbed off the sore spreads gradually, becoming larger. The mites live at the edge of the sore. The sheep loses its wool, and if not treated becomes dull and emaciated, death sometimes resulting. The loss of wool is tremendous in the range sections when the scabies appear in the flock. The disease is spread by locks of wool being dropped from infected animals and by their rubbing on posts and buildings where healthy animals are likely to have access.

In case that scab ever does make its appearance in the flock, separate the diseased animals from the healthy and dip the entire flock. Disinfect all stables and sheds. The dipping solution for the scab mite should be of the same brand as those used for the sheep tick. The difference in the two methods of treatment being that when dipping for scab a stronger solution of the dipping fluid is used and the sheep are held in the solution for two minutes instead of one. On infected animals the scab or crust should be loosened by one of the attendants while the sheep is in the dip.

The flock should be given a second dipping in about three weeks after the first. They should be permitted to graze on uninfected areas after dipping.

SHEEP LICE.

The sheep louse resembles the dog louse very much. The sheep rub against posts and buildings in their effort to overcome the irritation. If the owner notices a sheep rubbing itself frequently, he should examine it in that particular spot and a careful examination will reveal whatever lice are present. Dipping as for ticks is the best and most satisfactory method of removing lice from sheep.

INTERNAL PARASITES.

Internal parasites cause greater losses to the sheepmen east of the Mississippi than any other group of ailments.

The Stomach Worm.—The stomach worm (stronglus contortus) is a small white or reddish brown needle-like worm varying from one-half to one inch and a half in length. It is found in the fourth stomach of infested sheep, attached to the lining of the stomach or else in the partly digested food material. These parasites attach themselves to the wall of the stomach and feast on the sheep's blood.

The female worm lays her eggs within the sheep's body. These pass out with the dung and if they happen to be dropped in a moist place, a small worm merges from the egg in a few days or hours, as the case may be. If the weather is hot and dry and the eggs are dropped in a dry place the young worm does not live long, because it needs moisture in order to live. If the egg is hatched in a moist place the tiny worm swims around in the water and, possibly, becomes attached to a blade of grass, and is eaten by the sheep. Lambs are quite likely to be troubled more by stomach worms than the mature sheep; therefore, the owner should strive to produce early lambs, having them all dropped prior to April 1, so that they will be more advanced in growth by the time hot weather comes on, and in excellent condition, consequently more resistant. The late lamb is likely to go to pasture in rather poor condition and does not possess the resistance that the lamb one month to six weeks older possesses.

Symptoms of the Stomach Worm.—Loss of appetite; animal stands in a humped position off by itself. The mucuous membrane of the eyes and mouth become white, showing a bloodless or anaemic condition. Diarrhoea is likely to accompany these conditions.

Treatment.—The most satisfactory treatment for stomach worms is preventive. In other words, the sheep should graze on uninfested pastures. Where this plan is pursued the sheep should be moved to fresh pasture every two weeks, at least, on small areas where forage crops are planted. This might be done by using hurdles as a portable fence. By the time the flock has grazed the entire area, a month or six weeks will have elapsed; then they should be started again as before grazing over the whole area. When such a scheme is practiced it is well to let the young lambs graze ahead of the ewe flock. In this way they have access to the tender juicy leaves and there is less danger of worm infection when this method is practiced.

(1) Gasoline Treatment.—Fast the sheep over night and the next morning administer one tablespoonful of gasoline. The most satisfactory method is to mix the gasoline with a few ounces of fresh milk. No food should be given for several hours after treatment. This treatment should be repeated on four or five consecutive days. A week later administer another dose if the animal does not improve. Give one dose of four to six ounces of salts at beginning of treatment.

(2) Kamala Treatment.—Fast the sheep overnight as above; the next morning administer from one and one-half to two drams of Kamala with five ounces of linseed gruel. A lamb should receive 1½ to 2 drams of Kamala.

(3) Turpentine Treatment.—Fast the sheep over night and the next morning administer 3 ounces of turpentine and 7 ounces raw linseed oil. Some flockmasters pour turpentine over the salt and claim to be very successful in this practice.

(4) Blue Vitriol Treatment.—This is best administered in solution, a dose being one dram to each sheep. This treatment is considered valuable in advanced cases of stomach worm invasion.

The Lung Worm (Strongylus Filaris).—The general symptoms of lung worms in sheep are in many instances similar to those of stomach worms, the difference being that the lung worm creates an irritation in the lungs and bronchial tubes, which causes severe coughing.

The history of the lung worm is but partially known, and in some species totally unknown. It is believed that the worms deposit their ova in the air passages of the sheep, which is the host for strongylus filaria. In many instances the embryos are freed immediately, while in the oviparous species a longer time is taken. They crawl into the air passages of the host, or in many instances are thought to be swallowed and passed out of the body with the faeces.

Some hold to the belief that the larvae are eaten with the food and later, by active wandering, they work their way up through the œsophagus, and finally lodge themselves in the air passages of the lungs. It is the belief, also, that the ova may get directly into the air passages by inhalation of contaminated dust.

TREATMENTS.

Some recommend the burning of sulphur. This is done by placing the sheep in a well enclosed room and forcing them to inhale sulphur fumes. The sulphur should be permitted to burn as long as the attendant can stand to inhale the fumes. When he can stand it no longer he should remove the burning sulphur and let the sheep remain in the room for fifteen minutes. Repeat this treatment in a week. The worms are supposed to be forced out with the nasal discharge during the violent coughing spells.

The following treatment is recommended to those who have only a few sheep affected with the lung worm:

Oil of Turpentine—one teaspoonful.

Oil of Eucalyptus—one teaspoonful.

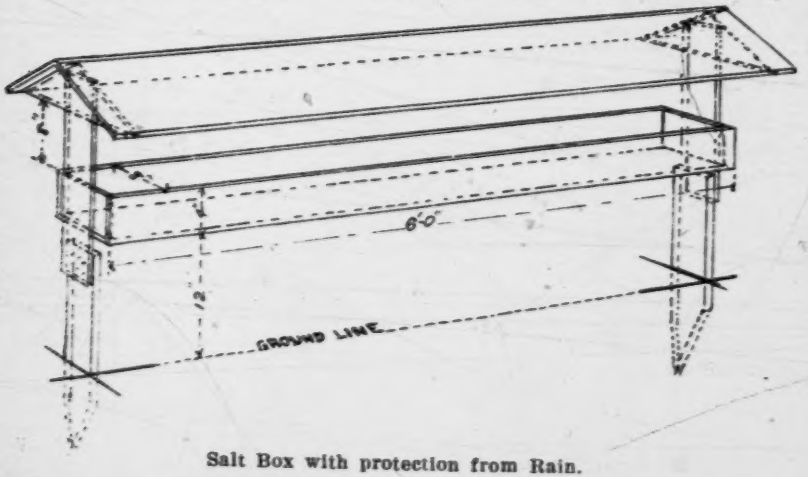
Add some boiling water and administer as an inhalation. Place a closed kettle on an oil stove and attach a tube from the nozzle to a sack that has been placed around the sheep's nose, and let it inhale the

vapor for a few minutes. Repeat this treatment on several consecutive days and relief should be brought about.

When sheep are found suffering from stomach worms or lung worms, if they are mediocre individuals and in fair condition, it is best to sell them, because a cure is not certain. The preventive treatment is the best method of obviating these two dreaded parasitic diseases in sheep.

Grub in the Head.—During the hot summer weather the gadfly lights upon the nose of the sheep and feeds upon the discharge from the nostrils. Eggs are deposited in the nasal discharge and hatch into tiny worms which make their way up into the nasal passages between the eyes. It is in these passages that the worms develop into large grubs.

Symptoms: The affected animal stands with its head drooping; it grinds its teeth frequently; turns about in a circle; swings its head,



Salt Box with protection from Rain.

and a green liquid is often discharged through the nasal passages.

Treatment.—Again the only satisfactory method of treatment is preventive. Pine tar smeared on the noses of the sheep every few days will aid in keeping the flies away. If there are but few sheep in the flock they may be caught and the tar applied individually, but where the flock is large too much time would be necessitated by this method. A number of sheepmen smear tar on the inner side of an especially prepared salt trough and when the sheep eat the salt they incidentally apply the tar themselves.

Professor Frank Kleinheinz, of Wisconsin, on the suggestion of some reputable sheepmen in Europe, recommends the following remedy although he admits he has never applied this treatment:

"Mix a little snuff tobacco thoroughly with a little linseed oil and let the mixture run into the sheep's nostrils. Hold the sheep's head high when pouring the liquid in. In this manner it reaches the spot

where the grubs are lodged, disturbs them, and when the sheep sneezes the grubs are dislodged."

Gid (Cysts Invading the Brain).—Symptoms: Twitching about the head; tossing head from side to side and moving in a circle.

Treatment.—There is no satisfactory method of treatment. The best advice to the owner of sheep affected with gid is to kill them for mutton purposes, as the trouble is purely local and in the early stages does not render the flesh of the sheep unfit for food.

Preventive Treatment.—As the gid parasite spends a portion of its life cycle in the canine species, in the form of a tape worm, all dogs should be treated often enough so as to keep them free from worms. Treatment for a large dog: Castor oil, 3 tablespoonfuls in the evening; next morning mix 3 drams of Kamala with 1 ounce of gruel and give as a dose.

The heads of all dead sheep should be burned so that dogs or other cainines can not become infested with these larvae which develop into tape worms.

Maggots on Sheep (Screw Worms).—Maggots are caused by blow flies. In the summer time some of the ewe flock are likely to become a little bit filthy behind and the "blow fly" feeds on this filth and deposits eggs. The eggs hatch and the maggots multiply. They eat their way into the flesh after a few days, and if they are not removed from the sheep's body it dies a very painful death.

Prevention.—The most satisfactory treatment lies in prevention. See that the sheep are kept clean, especially during the hot weather. Wash the unclean parts with a five per cent coal-tar preparation. Any of the coal-tar products can be used with satisfactory results. If the sheep become infested with maggots wash the affected parts and apply pine-tar after the maggots have been removed. Chloroform is often used to kill the worms.

DISEASES.

Constipation.—This disorder is caused by the feeding of too much dry feed such as straw and timothy hay, while, at the same time, there is a lack of succulent feed in the form of silage, roots, or green forage crops. In acute cases the sheep lie down and stretch and considerable pain is felt.

Treatment.—(1) Administer a 4 to 6 ounce dose of epsom salts followed by a change of feed. A stimulent should be administered, a good one being wheat bran with a little salt and ginger. A succulent feed should be supplied if available.

(2) Two to four tablespoonfuls of castor oil should relieve a constipated condition; if there is no passage in 24 hours, the dose should be increased by one-half and repeated.

Constitpation in Lambs.—This disorder frequently occurs to lambs one week or under in age. Inject two ounces of warm soap suds into the rectum by means of a small syringe. Another good aenema is a mixture of glycerine and water, one ounce of glycerine to one pint of water. A very small quantity should be injected as there is danger of rupturing the intestines.

Diarrhoea.—This disorder is usually caused by the overfeeding of

a succulent ration before the system of the sheep has become adapted to such feeds.

Treatment.—Put the sheep on a dry ration and administer a dose of castor oil, followed by a dose of the following:

12 drams prepared chalk.
1 dram powdered ginger.
1 dram laudanum.

Feed the sheep gruel until it begins to eat the regular ration.

Colic.—This condition is due to some derangement in the digestive organs.

Treatment.—See whether the food is not the cause of the disorder, and if it is, correct it. Administer one teaspoonful of ginger in some warm water. If a bloated condition accompanies this disorder an alkali should be administered, as bloatedness is due to an acid condition. Usually a tablespoonful of baking soda given with warm water will help to rectify this condition. In severe cases of colic a trocar and cannula, or a knife, should be used so as to liberate the gas. The incision is made at a point on the left side equidistant from the hip, backbone, and end of the last rib.

Catarrh (Cold).—This disorder is chronic in many instances. The vitality of the animal is lowered, due to exposure during wet, cold weather; or the condition may be brought on by compelling the animal to lie in damp buildings.

Treatment.—The cause will have to be removed before any results can be obtained. See that good feed is supplied and this along with a few doses of a tonic, such as ginger or gentian, ought to result in an improved condition.

Abortion.—This condition is brought about by disease, injury, and fright. When such a condition has been caused by disease the affected animals should be at once separated from the rest of the flock, and the stables properly disinfected. Ewes affected with contagious abortion should not be bred again, but should be disposed of for mutton purposes. In instances where abortion is due to fright or injury, the ewe may again be bred with safety. Often the expulsion of the afterbirth is somewhat delayed and assistance should be offered. This is done by flushing the womb with water that has been boiled and then allowed to cool to the proper temperature. Some good antiseptic such as lysol should be added to the water in a proportion of about 1 part lysol to 100 parts of water.

Eversion of Uterus.—This is a condition that frequently precedes parturition, and is probably caused by a weakened condition of the sustaining ligaments. The neck of the womb seems to be everted, sometimes protruding about six to eight inches. The exposed parts become dirty and infection is very likely to take place.

Treatment.—The protruding part should be washed with an antiseptic solution and carefully shoved back into place through the skin; next take a couple of stitches on either side of the vulva and tie. This will aid very materially in keeping the vagina in place. Since an infection is likely to have taken place, the affected parts should be washed out twice daily with some good antiseptic solution, preferably a one per cent solution of lysol. In case the affected parts

cause much pain apply astringents. The following has been used at the New Hampshire Station by the senior writer with success:

1 pint warm water.
2 ounces of lead acetate.
1 ounce laudanum.

This treatment should be administered by means of a 4 ounce syringe. Do not retain a ewe which has suffered from this disorder in the breeding flock another year. Fatten and sell her if she completely recovers.

Navel ill.—This is an infectious condition, the infection entering through the navel cord soon after birth.

Treatment.—Remedial treatment is of little value. Be sure to disinfect the stables after one case has made an apperance. If the lambs are dropped indoors, plenty of clean bedding should be supplied. As a safeguard it is well to wash the navel cord of the newborn lambs with a 2 per cent lysol solution. Some breeders apply tincture of iodine to the navel cord at birth.

Caked Udder.—Such a condition might be due to the fact that the young lamb is unable to extract all of the milk from the udder; or again, at weaning time this condition might possibly prevail. If a caked udder results at weaning time it is due to the fact that there is a careless shepherd in charge of the sheep, because the attentive shepherd keeps a watchful eye on the ewe flock at this season of the year, removing the milk from those having full udders.

Treatment.—In severe cases bathe udder with hot water and afterwards apply a mixture of turpentine and lard and rub well. Keep the ewe in warm, dry quarters during treatment.

Wool Eating Lambs.—Owing to the salt taste of wool the lambs are very frequently inclined to nibble away at long fibres or locks. In instances where this practice is continued for some time, wool balls are formed in the stomach, often becoming so large as to close the passage way between the stomach and intestines, thereby frequently causing death. Owing to this tendency among lambs it is well to shear the ewes before lambing time. If this cannot be conveniently done, the long loose wool fibres and locks around the udder should be removed by the shepherd before lambing. In the early stages of this disorder a dose of castor oil in milk is likely to prove beneficial.

Gravel (Calculi).—Old rams are most likely to suffer from this condition, although the young lambs are frequently affected. Lime granules accumulate in the urethra in the region of the retractor muscle attachment. Males should not be fed either sugar beets or mangels, as these roots are very likely to bring about such a condition. The symptoms are stupidity, stiffness in hind quarters, arched back, and dribbling of urine. If this condition presents itself the best thing to do is to slaughter the animal for mutton purposes at once before the system becomes poisened, as the chances to remedy the condition are few. If a very young lamb becomes affected, and if by manipulation of the urethra, no results are obtained, cut the urethra in two just above the scrotum and then draw the end through the skin, thus enabling the youngster to void his urine in this manner until large enough to slaughter.

Sore Sheath.—One of the causes of sore sheath is the ingrowing

of hairs that have been cut off short at shearing time, or there may be other causes, of which filth is one.

Treatment.—Inject permanganate of potash solution into the sheath by means of a small syringe. Use one-half teaspoonful of permanganate of potash to a quart of warm water. This treatment should be resorted to at least once daily, and in severe cases twice, until a cure has been affected.

Sore Eyes in Lambs.—The flockmaster often notices that some of the lambs begin to suffer with a slight infection of the eye shortly after birth. It is entirely possible that the infection gets into the eyes of the lamb at birth, as it is claimed that ewes sometimes suffer from leucorrhoea, which infection occurs in the vagina.

The shepherd should keep a careful watch of the young lambs and if an infection of the eyes is noticed, bathe them with a boracic acid solution. An excellent plan is to swab the eye with a clean piece of absorbent cotton soaked in the boracic acid solution once or twice daily. Some breeders use a small drop of coal tar dip diluted about ten times. An excellent precaution is to wash the face of affected lambs every few days so as to reduce the danger of contagion.

Sometimes lambs between six months and a year old become affected with sore eyes, and in such cases the boracic acid treatment is highly recommended.

Big Head.—Big head is apparently a new disease of which but little is known. A large percentage of cases are fatal. Some breeders massage the affected parts with liniment with some degree of success.

Needle Grass in Wool.—There are several species of needle grass on the Western prairies, but the stipia comata is probably the most common. When ripe the fruits of needle grass are hard and sharp pointed, being somewhat injurious to livestock. The fruit usually is possessed of a long serrated awn which adheres easily to the wool and causes a severe irritation of the skin, sometimes penetrating it. Sheep under these conditions do not thrive well unless an attempt is made to overcome the trouble.

Treatment.—On ranges infested with needle grass, the sheepmen should arrange to swim the sheep at intervals of three to five weeks during the fruiting season of the grass. After the seeds have been wet they burst and cause no further irritation. If there is no pond through which the flock can be driven, a satisfactory device, similar to a dipping vat, can be constructed at a small cost, the idea being merely to have the water deep enough to give all the needles a good soaking.

SHEEP FEEDING IN TEXAS.

Lamb feeding has never been conducted on an extensive scale in Texas, consequently much definite information is wanting at the present time. The Texas Experiment Station, located at College Station, is now quite well prepared to handle sheep feeding problems, and persons who desire information relative to such problems will do well to address correspondence in care of the Animal Husbandry Division, College Station, Texas.

In lamb production, a small amount of grain can be successfully

supplied during the suckling period. At the Wisconsin Station* Craig found that fat lambs which had received grain during the suckling period returned a 48 per cent greater profit than was returned by lambs which had received no grain until the time of weaning.

Field peas have never been used extensively for sheep grazing by Texas lamb feeders, although in parts of the state well adapted to this legume, feeders could put some good gains on their sheep during the first portion of the fattening period at a relatively small cost. At the Colorado Experiment Station** 100 lambs were pastured for seven weeks on field peas that were ready for harvesting, and during that period the average gain was 17 pounds each, or an average daily gain of .34 of a pound.

Rape is a valuable forage crop for sheep, and is used to a good advantage as a part of a fattening ration. At the Wisconsin Station*** wethers on rape for two weeks and receiving a grain allowance of 1.6 pounds in addition, made a gain of 3.3 pounds per head per week. This illustrates what can be done with rape under favorable conditions.

More extensive use of green forage crops should be made by parties fattening sheep and lambs, because, under ordinary conditions, gains so produced are made at a smaller cost than when harvested crops are provided as feed.

GRAZING ON ALFALFA.

Alfalfa pasture has been used for grazing purposes for a number of years. Sometimes parties have allowed sheep to graze their alfalfa during an entire season without a single loss, while again, during another year, many fatalities occurred in the flock.

To the present day† no enlightenment has been given as to the causes of the losses. Of course there are a number of prevalent theories regarding the cause of the losses, but none of them apparently seem to hold water. A rather extensive investigation of this subject was conducted by the Colorado Station† some years ago. Queries were sent out to those farmers who had had some considerable experience in grazing sheep on alfalfa, but as a result of this investigation no definite cause of losses from grazing alfalfa was discovered. Many stockmen held opposite views. Some of the stockmen maintained that the flock should remain on the alfalfa night and day, regardless of weather conditions. Instances were recorded where sheep bloated and died in 15 to 20 minutes after being placed upon the alfalfa pasture; and again, fatalities have occurred during the middle of the afternoon, a time when one would judge conditions to be most favorable.

Certain breeders claim that the sheep should have been well filled before being turned into the alfalfa field, the theory being that, on account of the animal being full, the natural tendency would be to eat but a small amount of the green legume. Others endeavor to

*Wisconsin Station Report, 1894.
**Colorado Station Report, 1904.
***Wisconsin Station Report, 1894.
†Colorado Bulletin No. 52.

shatter this theory, claiming that the sheep should go into the alfalfa field with an empty stomach, the belief being that there is more room for the accumulation of gas, and hence less pressure on the vital organs.

Texas sheepmen should take every precaution in grazing sheep on alfalfa. Those who have a sufficient amount of other pasture or forage crops should not pasture the alfalfa. Above all, do not permit pure-bred or highly valued sheep to graze on alfalfa. In Colorado it is estimated that the losses from grazing sheep on alfalfa averaged between 5 and 10 per cent of the flock annually, which is too high a death rate.*

GAINS PER DAY.

When sheep are properly fed they make a larger gain per 100 pounds liveweight than do beef. The daily gain varies between .18 pounds and .5 pounds per head daily. Lambs make a larger daily gain than do mature sheep. For a given amount of liveweight sheep will consume more feed than steers and make a proportionately larger gain.

COMMON ERRORS IN FEEDING.

In fattening livestock many feeders make the mistake of supplying a ration too high in protein content. The tendency is for Texas feeders to feed too much cottonseed meal. Supplying too much protein in this case means a waste of money. An animal can utilize a certain amount of nitrogenous food materials and no more.

Another erroneous but prevalent idea exists in the minds of many that silage, in itself, forms a fattening ration. This is a mistake. Animals can not be fattened on a sole ration of silage. By referring to the digestible nutrients of corn silage in Table 2, which is given for 100 pounds, it is obvious to the reader that silage, in itself, is far from being a balanced fattening ration.

SELECTION OF A RATION.

Always utilize home-grown feeding stuffs if they are available, because they are likely to be the cheapest that are obtainable. Supply a palatable ration to the flock. All rations are not equally palatable. Silage, or roots in the ration, add tone, thus tending to promote health. A mixed grain ration is usually considered better than a single grain, because sheep like a variety.

In placing sheep and lambs on feed care should be taken to gradually work them up to a full ration. It would be unwise to

*Since the preparation of this paper Healy and Nutter, of the Kentucky Station, through the columns of the Breeders' Gazette, have issued a report on their study of bloat in cattle caused by alfalfa and clover. These investigators believe bloat to be caused by the fresh clover blossoms. These blossoms are supposed to contain some sugar which when undergoing fermentation in the rumen form a considerable amount of gas, thereby causing distension. In acute cases of bloat in cows one quart of a 1½ per cent solution of formalin, followed by placing a wooden block in the mouth of the animal to aid the gas in escaping, proved very successful. In cases of acute bloat in sheep the author suggests that this remedy be tried, using a one-half pint dose of the 1½ per cent solution of formalin.

bring a flock of lambs direct from the range and place them on full feed at the outset. It must be remembered that the sheep is rather a delicate animal, and after having been on a grass ration, a sudden change to one vastly different and high in its nitrogen content would be likely to cause a serious setback.

The sheep should receive as much roughage from the beginning as they will consume, but the concentrate allowance must be small at first, gradually being increased so that in a few weeks' time the flock will be on a full feed.

FOOD MATERIALS NEEDED FOR ONE DAY.

Many amateur sheepmen are lacking in information relative to the amount of feed to supply the flock. It is hoped that the following table* will aid many in this respect:

Table I

DIGESTIBLE ORGANIC SUBSTANCES
Per 1000 pounds live weight daily

Kind of Animal	Dry Matter Lbs.	Protein Lbs.	Carbohydrates Lbs.	Fat Lbs.	Nutritive Ratio
Breeding Sheep					
Coarse Wool	20	1.2	10.5	0.2	1:9.1
Fine Wool	23	1.5	12	0.3	1:8.5
Ewes Suckling Lambs	25	2.9	15	0.5	1:5.6
Fattening Sheep					
First Period	30	3.0	15	0.5	1:5.4
Second Period	28	3.5	14.5	0.6	1:4.5

Definition of Terms:

(1) *"Dry matter"* is that portion of the feed material which is left after all the water has been evaporated.

(2) *Digestible organic substances* are those which after having been acted upon by the digestive juices, aid in sustaining animal life and development.

(3) The *proteins* of foodstuffs are high in nitrogen content. The chief function of the nitrogenous feedstuffs is that of muscle building and repair work. The wool makes more rapid growth when a ration high in protein is supplied.

(4) The *carbohydrates* are composed largely of starches and sugars and in the animal body are converted into fat or else used in the production of heat and energy.

(5) *Fats* in the animal body are utilized in a similar manner as are the carbohydrates.

(6) *The nutritive ratio* is that which exists between the digestible protein and the carbohydrates and fats combined. In the ratio, the fats are multiplied by 2.25 before being added to the carbodydrates because the heat value of fat is 2.25 times as great as that of carbohydrates.

*From Jordan's Feeding of Animals, p. 436.

SOME COMMON TEXAS FEEDS.

*Table No. II shows some of the common feeds that grow in Texas. A chemical analysis of the digestible nutrients of some of the more recent but popular feeds, such as feterita and milo, are lacking, which accounts for their absence in the table. Ordinarily, feterita and milo are figured as being 85 to 90 per cent the value of dent corn for feeding purposes, although the efficiency of these feeds may be higher.

AVERAGE FEEDING VALUE OF SOME IMPORTANT FEEDING STUFFS.*

Table II.

Name of Feed	Total Dry matter in 100 lbs.	Digestive Nutrients		
		Crude Protein lbs.	Carbohydrates lbs.	Fats lbs.
Concentrates:				
Dent corn	89.4	7.8	66.8	4.3
Flint corn	88.7	8.0	66.2	4.3
Corn and cob meal	84.9	4.4	60.0	2.9
Standard wheat middlings	88.8	13.0	45.7	4.5
Wheat bran	88.1	11.9	42.0	2.5
Rye	91.8	9.5	69.4	1.2
Barley	89.2	8.4	65.3	1.6
Oats	89.6	10.7	50.3	3.8
Buckwheat	86.6	8.1	48.2	2.4
Rice	87.6	6.4	79.2	0.4
Rice hulls	91.2	0.3	19.9	0.1
Canada field pea	85.0	19.7	49.3	0.4
Cowpea	85.4	16.8	54.9	1.1
Soy bean	88.2	29.1	23.3	14.6
Kafir corn	90.1	5.2	44.3	1.4
Ground kafir heads	86.4	4.2	42.4	1.2
Milo seed	91.0	4.9	44.8	1.3
Ground maize heads	90.3	4.2	45.0	1.1
Linseed meal (old process)	90.2	30.2	32.0	6.9
Cottonseed	89.7	12.5	30.0	17.3
Cottonseed meal	9.3	37.6	21.4	9.6
Cottonseed hulls	88.9	0.3	33.2	1.7
Peanut cake	89.3	42.8	20.4	7.2
Dried roughage:				
Corn stover (ears removed)	59.5	1.4	31.2	0.7
Hay from mixed grasses	84.7	4.2	42.0	1.3
Timothy; all analyses	86.3	2.3	42.4	1.3
Bermuda grass	92.9	6.4	44.9	1.6
Johnson grass	89.3	2.9	45.6	0.8
Oats	86.0	4.7	36.7	1.7
Buffalo grass	85.0	3.0	42.0	1.6
Texas blue grass	85.7	5.1	36.3	1.4
Gama grass	85.7	4.2	39.9	0.9
Alfalfa (Western U. S.)	92.2	11.1	39.1	0.6
Cowpea	89.5	5.8	39.3	1.3
Soy bean	88.2	10.6	40.9	1.2
Crimson clover	90.4	10.5	34.9	1.2
Sweet clover	92.1	11.9	36.7	0.5
Oat and pea	89.5	7.6	41.5	1.5
Oat and vetch	85.0	8.3	35.8	1.3
Oat straw	90.8	1.3	39.5	0.8
Silage:				
Corn (recent analysis)	26.4	1.4	14.2	0.7
Sorghum	23.9	0.1	13.5	0.2

LAMB FEEDING IN TEXAS.

Lamb feeding in Texas has, up to the present time, not been conducted upon an extensive scale. Interest is increasing, and during

*Henry: "Feeds and Feeding."

the next few years this important industry is quite likely to reach an enormous magnitude.

Lamb feeding in Colorado has for many years been an important industry, hundreds of thousands of lambs being fattened annually. At weaning time the lambs are shipped long distances from the ranges of Idaho, Montana, Utah and Wyoming to the Colorado feed lots where they are fattened on various rations; and, in most instances, sold at a good profit. Texas has a tremendous natural advantage in respect to lamb feeding over many of the other states. Nature has enriched this great state with ranches and ranges which, with but few exceptions, offer excellent grazing for livestock throughout the entire year. Owing to the mild climate a greater variety of feed and forage crops can be produced in this section than in any other part of the country, and at a smaller cost. The northern range sheepman is not ordinarily so situated as to be able to fatten his lamb crop. He must necessarily sell his lambs to the man who has feed at his disposal.

In the lamb industry there are two profits usually derived: First, one by the producer; and, second, one by the feeder. Sometimes the range man disposes of surplus stock at a good price and is well satisfied, while often, after having sold to the feeder, he comes to the conclusion that he has sold his lambs too cheap.

Many of the Texas range sheepmen are ideally situated and more of them should make a practice of fattening their own lambs. By following out this plan the grower should reap the benefit of his usual profit, plus the profit that had heretofore been made by the man who has grown wealthy as a result of his ability to buy at a low figure and sell at a profit. Some rangemen say: "We produce the lambs and sell them to the feeder at a profit. We do not care to engage in the finishing end of it." While this may be all quite true, those rangemen who are favorably situated should endeavor to make as much out of the sheep business as possible.

While lamb feeding is profitably conducted nine years out of ten by the skillful feeder, there are many operators who feed at a loss each year. This is because untrained feeders plunge blindly into the business without any knowledge of it whatever. This is a mistake, and those who contemplate going into the lamb feeding business should gain some practical experience in sheep feeding before investing heavily in feeder lambs. There is much truth in the statement, "the eye of the master fattens his flock." The most successful feeder must understand the animals he is feeding; he must handle his flock with gentleness upon all occasions. Sheep fear the rough "hot headed" attendant who handles them with indifference and under rough treatment they are not likely to thrive their best.

SAMPLE RATIONS FOR FATTENING SHEEP.

The feeder must understand the feeding of animals and should be familiar with the composition of the common feedstuffs that are ordinarily used.

A Balanced Ration.—A balanced ration is considered as being a combination of feeds containing protein, carbohydrates, and fats

in such a proportion that the animal without a waste of feed is properly nourished for a period of twenty-four hours.

The following rations will give the amateur sheepman an idea of the proportion of concentrates to roughage in the fattening ration. These rations are figured on the basis of 100 pounds liveweight. In other words, the rations which follow are figured to be sufficient food for one day for a 100-pound sheep. Each ration is considered a good average fattening ration, and the feeder should be careful to gradually work the flock up to the required amount of concentrates.

The sheep should be gradually worked on to a full allowance of cottonseed meal. Do not start them with more than .2 pound of meal daily, and gradually increase up to the full allowance. Remember that the body can utilize only so much protein and no more. Excessive protein feeding is a loss of money. A good plan to follow is to mark certain members of the flock and weigh them at regular intervals. This should be done if the feeder is not familiar with the handling of sheep. If he is an old hand at the business he is able to observe whether the lambs are making a satisfactory gain. If a satisfactory gain is not being made, something must be wrong, and an effort should be made to ascertain the cause.

Sample rations per 100 pounds liveweight:

(1)

Cottonseed meal or cake	¾ lb.
Cottonseed hulls	1½ lbs.
Silage	3½ lbs.

(2)

Ground feterita or milo	1½ lbs.
Alfalfa hay	2½ lbs.

(3)

Cottonseed meal	.6 lb.
Molasses	1.4 lbs.
Cottonseed hulls	2.0 lbs.

(4)

Cottonseed meal	.6 lb.
Ground feterita	1½ lbs.
Feterita roughage	2 lbs.

(Cut by ensilage cutter.)

(5)

Ground feterita	1½ lbs.
Oat and pea hay	2½ lbs.

(6)

Cottonseed meal	.6 lb.
Ground feterita	1.0 lb.
Johnson grass hay	2.0 lbs.

(7)

Cottonseed meal	.4 lb.
Feterita or kafir (ground)	1.0 lb.
Silage	3½ lbs.
Hay	1.0 lb.

SILAGE FOR PERIODS OF DROUGHT.

Occasionally Texas stockmen find their ranges fully stocked and, at the same time, indications of a drought presenting itself. Such a condition is indeed serious and during past years severe losses have occurred due to a want of feed. During a period of drought many stockmen have been forced to sell their stock at a sacrifice or else lose many head through starvation.

At the present time the silo is coming to be regarded as an important factor in the successful production of livestock, especially in sections visited by droughts. The ranchman should erect and fill silos during a normal season carrying sufficient tonnage to maintain the flock or herd through a drought period of reasonable length. The ensilage crop properly placed in a good substantial silo will keep for a number of years. In Kansas many stockmen have used

the silo for the same purpose herein discussed and very satisfactory results have been obtained.

There are a number of silos of different construction. Although space does not allow a detailed discussion of silos it is suggested that readers who are interested in silo construction secure reliable information regarding the silo before deciding to build a particular kind. The pit silo will, no doubt, continue to gain in popularity in the plains country, owing to its small cost. Although some capital is required in silo construction it is money well invested owing to the fact that, durng a period of drought, it is capable of paying for itself ten times over.

FORAGE CROPS FOR TEXAS SHEEP.

Kind	Seed per acre	Date of seeding
Rape	*3 lbs. Drilled	Sept. 1-May 1.
	5 lbs. Broadcast	
Cowpeas	¼ to 1½ bushels	April 1-May 15.
Soy beans	½ to ¾ bushel	April 1-May 15.
Canada field peas and oats	1 bushel	Feb. 15-March 15; Oct. 15-Feb. 15—South Texas.
Oats and vetch	**1½ bushel oats ½ bushel vetch	Sept.
Rye and crimson clover	**1 bushel rye 15 lbs. crimson clover	Sept.
Oats	1½-2 bushels	Sept. or Feb. 15-March 15.
	a	
Wheat	1 bushel	Sept. or Feb. 15-March 15.
Barley	1½ bushels	Sept. or Feb. 15-March 15.
Rye	1 bushel	Sept. or Feb. 15-March 15.
Alfalfa	10-20 lbs.	Sept. 1-Oct. 15.
Bermuda grass	1 to 2 lbs. of seed, or root stalk every 2nd row, 3 feet apart	April-May.
Burr clover	**10 lbs. clean 40 lbs. burr	Aug. 15-Sept. 15.
Sorghum cane	10 lbs. in rows 1 bushel broadcast	April 1-August 1.
Sudan grass	6 lbs. in rows 20 lbs. broadcast	April.
Japanese cane	Triple line in 5-foot rows	Dec. or Feb.
Sweet clover	10-15 lbs.	Sept. 1-Oct. 15.
	b	
Milo and cowpeas	7 to 8 lbs. of each in alternate rows	April 15-May 15.
Permanent pasture; Bermuda, burr clover and Rescue grass	Bermuda as above Burr clover as above Rescue grass, 10 lbs.	As above. As above. August 15-Sept. 15.

* Drilled only in North Texas.
** East Texas.
a N. W. Texas.
b West Texas.

BREEDING.

Animal breeding is the art of selecting and mating of the domesticated animals by man in his effort to propagate and improve their kind.

If a male and female possessing desirable characteristics in common are mated we naturally expect that, in the offspring, these characteristics will be stronger and more prominent. On the other hand, offspring resulting from parents possessing weak points in common, are very likely to possess these characteristics intensified, or less desirable than in either parent, because it is quite true that weak and undesirable characteristics are heritable just as much as the desirable kind.

Only pure bred sires should be used in the breeding operations. All registered animals are pure bred, providing the breeders are honest in their registration methods. The word "thoroughbred" is not synonymous with "pure bred". "Thoroughbred" is the name applied to a particular breed of horses.

"Pure bred" sheep are those whose parents are registered or eligible to registry.

A "grade" sheep is the offspring of a pure bred sire and a dam of impure breeding.

A "scrub" is the offspring of parents of impure breeding. It is an animal that fails to come up to a certain standard.

A "crossbred" is an offspring resulting from the mating of sire and dam of two distinct breeds.

By "breeding in-and-in" is meant the mating of individuals of the closest relationship; as, for example, sire to daughter and brother to sister.

"Line" breeding is the mating of males and females of related blood lines, usually tracing to a single line of descent. In the practice of line breeding, although related individuals are mated, the relationship of the mated animals is usually more distinct.

In-bred and line-bred animals are usually considered as being more prepotent than the ordinary pure bred animals that are not the result of "line breeding". This is due to the fact that parents of the same blood lines are, when mated, more apt to transmit certain desirable characteristics to their offspring as a result of intensification of the desirable characteristics.

The sheepman should keep a close watch on the breeding flock, observing the quality of the get of the several rams. This can be done by mating a few ewes of known breeding qualities to individual rams and marking them, and later observing the quality of the get. Eliminate from the flock that sire which fails to get lambs of quality and discard those lambs, both male and female, that do not come up to the standard. Persons who believe in the theory that "like begets like" must remember that undesirable points or defects are just as likely to be inherited as are the desirable ones.

The ewes should not be used for breeding purposes until they are from fifteen to eighteen months of age, because breeding them as lambs tends to stunt and the normal development is not reached.

Ram lambs should not be used for breeding purposes. A ram lamb, however, might be mated with three or four ewes in order to test him as a sire.

The mature ram should not be mated to too many ewes. When allowed to run with the flock each ram should be allowed not more than 60 to 75 head of ewes. Experienced sheepmen claim that yearling rams should he mated to only one-third the number of ewes allowed to every mature ram.

Some breeders have allowed one ram to cover 200 ewes in a single season, but such a number is too many, as it draws heavily on the vitality of the ram. Some noted rams have been used in the flock stud up to the age of 14 years and with satisfaction.

If the shepherd wishes to know the number of ewes that are being covered by a certain ram, dust some lamb black on his breast daily

and in covering the individual ewes the black will show on the rump of the ewes covered.

Age at Which to Sell Ewes.—The range man should dispose of his aged ewes along about the sixth year because, after that age, it will be rather difficult to get them into condition for marketing. Youatt says: "The natural age of the sheep is about ten years, to which age they will breed and thrive well, although there are instances of their breeding at an age of fifteen and twenty years."

THE SHEEP'S TEETH.

The sheep has no front teeth in the upper jaw. There are eight incisors in the front portion of the lower jaw, and six molars or grinding teeth on either side of the upper and lower jaws.

Although there is some irregularity in the replacement of the sheep's milk-teeth by the permanent incisors, the age test in most instances is fairly reliable. The lamb holds its full set of baby teeth until about the age of 14 to 15 months, at which time the two central incisors are shed and replaced by the central pair of permanent incisors. These central incisors attain their full growth between twenty and twenty-four months. The lateral incisors make their appearance sometime between the age of 24 and 30 months and when the sheep is three years of age the four central incisors are fully developed. At four years of age the three pairs of incisors are fully developed and at five years the sheep has a full mouth of well developed incisors.

CLASSIFICATION OF BREEDS

	Weight—lbs.	
	Rams	Ewes
Fine Wools:		
Merinos	125-175	90-135
Delaines	135-190	110-150
Rambouillets	140-220	115-175
Medium Wools:		
Southdown	160-190	130-155
Shropshire	165-125	140-175
Hampshire	195-275	150-200
Oxford	190-280	175-250
Suffolk	175-250	150-200
Dorset Horn	175-225	145-165
Cheviot	160-220	130-165
Tunis	160-185	110-150
Long Wools:		
Lincoln	200-300	170-250
Cotswold	190-290	170-245
Leicester	180-250	150-225
Romney Marsh	175-280	160-200
Wensleydale	165-225	150-200
Karakule	175-250	140-200

CLASSES AND GRADES OF MARKET SHEEP.*

- **Fat sheep**
  - Lambs: Prime. Choice. Good. Cull.
  - Yearlings: Prime. Choice. Good. Cull.
  - Wethers: Prime. Choice. Good. Cull.
  - Ewes: Prime. Choice. Good. Cull.
  - Bucks and stags: Good; Common or cull
- **Feeder sheep**
  - Lambs: Selected. Choice. Good. Common.
  - Yearlings: Choice; Good; Common
  - Wethers: Choice; Good; Common
  - Ewes: Selected. Choice. Good. Common.
  - Bucks and stags: Good; Common
- **Breeding sheep**
  - Ewes: Choice; Good; Common
  - Bucks

CLASSES AND GRADES OF MARKET SHEEP (Continued).

Definition of terms used in the above market classification of sheep:

(1) "Mutton" sheep are all sheep and lambs sold for slaughter regardless of condition or weight.

(2) "Feeder" sheep on the market are most generally shipped

*Illinois Bulletin No. 129, by Coffey.

from the range sections. These sheep do not have the finish and are purchased by speculators who remove them to feed lots where they are fattened and returned again to market for slaughtering.

(3) "Breeding" sheep on the market are those ewes and rams displaying type and breeding. They are quite often purchased by farmers who desire a small breeding flock. It not infrequently happens that many excellent breeding sheep are slaughtered by the packers owing to the fact that there is no demand for breeding sheep at the hands of stockmen.

(4) The quotations on "lambs" on the market apply to lambs from the time of the first offering to the age of from 10 to 14 months. On the Fort Worth market the term "genuine" lamb is adopted about March 20, to apply to lambs born during the early winter. After May 15, offerings of the previous spring's crop are classified as "yearlings" and "ewes."

(5) The term "yearling" is applied in the meat trade to those that can no longer be classified as lambs. This term applies exclusively to wethers, because the "break joint" disappears in female lambs at from 12 to 14 months of age. The "break joint" is found just above the pastern joint. It disappears at maturity.

(6) The term "ewe" on the market is used to designate all the mature female offerings.

(7) The term "bucks" is used on the market to apply to rams. "Stags" are males unsexed after maturity. They are graded the same as bucks on the market.

GRADING LAMBS ON THE MARKET.

In grading sheep on the market, quality, condition, and weight are the strong points kept in mind by sheepmen. On the Fort Worth market, the grades of lambs are "prime," "choice," "good" and "culls."

Lambs that grade as "prime" are those showing quality, finish and development in the region of the high price cuts. Lambs to grade as prime should neither be too heavy nor deficient in weight. To be graded as prime, lambs should in addition to quality and finish, weigh from 55 to 65 pounds in the case of "genuine" spring lambs and from 65 to 85 pounds in the case of the ordinary weaned lamb.

DRESSING MUTTON ON THE FARM.

Selecting the Animal.—When selecting a killing sheep be sure to choose one that is in a good killing condition, as it is not possible to secure good, juicy flesh of a high flavor from a thin or unfinished animal. The backbone of the unfinished sheep is sharp and sparingly covered; the ribs are but lightly covered with flesh and the neck is lacking in fullness. The fat or finished sheep carries a strong, well rounded and deeply fleshed back, the spinal column being deeply covered with firm flesh; the ribs are covered with a layer of firm flesh; the dock is thick and fat, and the neck strong and well muscled.

Twelve to twenty-four hours before slaughtering place the animal in a lot without feed and water. When a practice of this kind is

followed the stomach is not in a distended condition at the time of killing, and there is less danger of the amateur butcher accidentally cutting the stomach or intestines, thereby permitting gases to escape and taint the flesh.

Have the sticking knife, skinning knife, hoisting apparatus, clean cloths and water in readiness before the operation is begun, because once started, the dressing should be continued to completion with haste. On the farm the sheep is usually placed upon a box or killing platform, the head being allowed to hang over the edge. The operator holds the animal down by the weight of one of his knees, grasps the jaw with his left hand, and inserts the knife directly back of the jaw and ears, severing the jugular vein. All suffering can be avoided by severing the spinal cord at the first joint between the head and neck. During this operation it is unnecessary to cut the oesophagus and windpipe.

The next step is to remove the hide. Start with the front legs, first placing the foot between the knees and cutting a small strip of skin from the front part of the leg, running from a point below the shoulder down the front of the knee to the pastern. Turn the blade of the knife sideways and open the skin over the point of the shoulder blade to the median line of the neck, and then continue out to the jaw. After having removed the skin from both forelegs the operator next begins on the rear members by drawing the leg forward, placing it between his knee and then cutting a strip of skin beginning on the rear thigh above the hock, continuing over that member to the pasterns. After the removal of the skin from the legs the knife is inserted between the tendon and the metacarpal bone below the hock, and a stout string is passed through this common point of the hind legs and the carcass hoisted. The skin is next opened along the median line of the body and after a start with the knife, the skinning is completed by "fisting."

Under this practice the operator grasps the edge of the skin with the left hand, say along the median line of the body, pulling in a direction away from the body. The right hand is then pushed against the inside of the skin at the junction of the skin and the carcass, and by means of a rotary motion with the fist the skin is quickly removed from the body. "Fisting" the skin off is more rapid than the knife and at the same time a neater job results. The operator should be sure to have washed his hands before bringing them in contact with the skinned carcass.

Some butchers "fist" the skin loose from the belly before opening the skin along the median line, the advantage of this method being that there is less likelihood of cutting the flesh.

A second method of killing sheep is practiced on some farms and also in the large packing houses. This method differs from the one above mentioned, only in the fact that the sheep is hoisted by a hindleg and killed. The method of sticking is the same. This method has an advantage over that first mentioned in that more thorough bleeding results. The skinning operation is the same as previously described.

When skinning a sheep the amateur butcher should remember not to touch the flesh with his dirty hands after having handled the wool, owing to the danger of imparting a "woolly" flavor to the meat.

After the skin has been removed wipe the carcass hurriedly with a cloth that has been dipped in hot water and wrung dry.

The viscera are now ready to be removed. With the sharp sticking knife cut around the rectum allowing it to drop into the pelvic girdle. The body is next opened along the median line of the abdominal cavity, care being taken to avoid cutting the entrails. If the carcass is for home consumption the breast bone may be split, but if it is intended for market purposes it offers a more attractive appearance when left whole.

Upon opening the abdominal tract a layer of fat, commonly termed "caul" fat, surrounding the digestive organs is observed. In dressing lambs this fat is carefully removed before the entrails are taken out and placed in some warm water until the viscera have been removed and the interior of the abdominal cavity wiped clean. Then this caul fat is wrapped around the hind legs and extends down the front of the body, thus making the carcass more attractive.

Rapidity and cleanliness should be practiced in dressing sheep. Professional butchers are able to dress a sheep in three to five minutes with ease.

The Woolly Flavor.—Many persons believe that all mutton flesh is possessed with a peculiar undesirable "woolly" flavor. This is not true, but on the other hand, there is not a more highly flavored meat than a choice roast or chop of a prime lamb. Roast lamb is served at the great state dinners in the United States and abroad, and certainly it needs no further recommendation to the people.

WHOLESALE PRICES.

The following table shows the Chicago wholesale quotation by Armour & Company, on dressed mutton and lamb, May 13, 1915.

Name of cuts.		Wholesale prices per pound. Mutton.	Lamb.
Saddle	Legs	17 cents	23 cents.
	Loin	17 cents	23 cents.
Rack	Hotel	26 cents	40 cents.
	Market	14 cents	18 cents.
Stew	Chuck and Breast	10 cents	12 cents.

SHEEP SCAB IN TEXAS.

Until recently very little effort it seems had been made by Texas to secure the co-operation of the United States Bureau of Animal Industry in an effort to stamp out sheep scabies.

In accordance with Bureau of Animal Industry Report No. 212, the entire state of Texas is under Federal quarantine, and no sheep are permitted to leave the state except in cars placarded, "Exposed sheep for slaughter," or a certificate showing them to have been dipped under Bureau Supervision when for purposes other than immediate slaughter.

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, in a letter dated June 24, 1915, says, in part, regarding the Federal quarantine against sheep scabies: "This quarantine has been in

effect for several years, but it appears that up to the present time very little effort has been made by the State of Texas to eradicate sheep scabies or obtain the co-operation of the Department of Agriculture in controlling that disease. It is believed that by proper co-operation between the State of Texas and the Department of Agriculture, the present conditions could be very much improved. This could be done by the state placing under quarantine the areas in which sheep scabies exist, and strictly maintaining such quarantine provided the Federal quarantine is limited to the same area."

The following law placing the control of sheep scabies in charge of the Live Stock Sanitary Commission has recently been placed upon the Texas statutes:

Placing Sheep Scabies under Provisions of Live Stock Sanitary Commission.

An Act to amend Article 7314, Chapter 8, of the Revised Civil Statutes of 1911, describing the duties and powers of the Live Stock Sanitary Commission so as to place scabies in sheep under the provisions of said Commission, and to make it the duty of said Commission to stamp out and eradicate scab in sheep, and cholera in hogs in this state, and to provide for quarantining against other states, and the bringing of infected sheep from other states into this state; providing for the appointing of county inspectors under this act, repealing the present law passed by the Thirty-second Legislature relative to appointing inspectors, and the eradication of scab, and repealing all laws and parts of laws in conflict herewith, and declaring an emergency.

Be it enacted by the Legislature of the State of Texas.

Section 1. That Article 7314 shall hereafter read as follows:

Article 7314. It shall be the duty of the Commission provided for in Article 7312 to protect the domestic animals of this state from all contagious or infectious diseases of a malignant character, including cholera in hogs, whether said diseases exist in Texas or elsewhere; and for this purpose they are hereby authorized and empowered to establish, maintain and enforce such quarantine lines and sanitary rules and regulations as they may deem necessary. It shall also be the duty of said Commission to co-operate with live stock quarantine commissioners and officers of other states and territories, and with the United States Secretary of Agriculture, in establishing such interstate quarantine lines, rules and regulations as shall best protect the livestock industry of this state against Texas or splenetic fever and scabies in sheep. It shall be the duty of said Commission upon receipt by them of reliable information of the evidence among the domestic animals of the state of any malignant disease, including scabies in sheep and cholera in hogs, to go at once to the place where any such disease is alleged to exist and make a careful examination of the animals believed to be affected with any such disease, and ascertain, if possible, what, if any, disease exists among the live stock reported to be affected and whether the same is contagious or infectious; and if said disease is found to be of a malignant, contagious or infectious character, they shall direct and enforce such quarantine

lines and sanitary regulations as are necessary to prevent the spread of any such disease. And no domestic animal infected with disease, or capable of communicating same, shall be permitted to enter or leave the district, premises or grounds so quarantined, except by authority of the Commission. The said Commission shall also, from time to time, give and enforce such directions and prescribe such rules and regulations as to separating, feeding and caring for such diseased and exposed animals as they shall deem necesarry to prevent the animals so affected with such disease from coming in contact with other animals not so affected. And the said Commissioners are hereby authorized and empowered to enter upon any grounds or premises, to carry out the provisions of this act. If scab or scabies are found in any flock of sheep when same is inspected, which inspection shall be made whenever the Commission may receive information by notification by any citizen or otherwise that scab probably exists, any member of said Commission, or an inspector appointed by said Commission, shall have the power, and he is hereby given the power, to inspect and dip said sheep at the owner's expense; and if any owner or owners shall refuse to permit said sheep to be dipped after having been examined and condemned by said Commission, he shall be fined in any amount not less than fifty dollars, nor more than two hundred dollars, and if any owner or owners shall refuse to pay the actual cost of said dipping, the Commission, as hereinbefore provided, shall have the right to bring civil action against such owner or owners, in the county where said sheep are so inspected, for the sum or sums actually paid out as the expense of said inspection and dipping; provided, that in case of the Live Stock Sanitary Commission shall not have sufficient number of inspectors to execute the provisions of this law, then the Commission may appoint a resident sheep inspector to serve in one or more counties whenever it is necessary to do so, provided the Commissioners Court in said county or counties shall agree to pay the salary of said inspector, or their pro rata of said salary based upon the number of sheep in each county as shown by the tax roll of said counties, where the duties of inspector are performed in more than one county. Said inspectors shall be paid a salary of not less than twenty-five dollars per month nor more than one hundred dollars per month. Such inspectors shall be practical and experienced sheepmen; they shall be under the exclusive control of the Live Stock Sanitary Commission, and shall be subject to removal by said Live Stock Sanitary Commission, or either of said Commissioners, whenever said Commission or Commissioners shall deem necessary to do so.

Sections 2 and 3 repealing and emergency clauses. Approved and became operative law March 23, 1915.

It is hoped that some provision will be made whereby co-operation with the Federal Government may be brought about. It is a disgrace to the state and sheepmen of the state of Texas to be so quarantined. Just so long as the entire state of Texas is under the Federal quarantine, on account of the prevalence of scabies, just so long will the sheep industry of this great state continue to decline. There is no incentive for it to do otherwise.

THE WOOL CLIP.

The shearing season in Texas usually begins early in March in the southern part of the state. On farms where small flocks are kept shearing may be safely done early, and if cold rain storms set in, the sheep can be given shelter under a shed or in a barn.

It is considered advisable by many well informed sheepmen to shear early, as it is the belief that the sheep thrive better after shearing. Especially is this true when hot weather prevails.

Early shearing is advantageous from the standpoint of lamb production. The lambs are better able to find the teats of their mothers after the latter have been shorn. Quite frequently the lambs suck and nibble at locks of wool dangling from their mothers and "wool balls" frequently result, these sometimes proving fatal.

A number of farm wool-growers in the East formerly washed their sheep in the brooks before shearing, the idea being to remove as much of the dirt from the wool as possible. Although the old time sheepmen were quite successful in this practice, it was nevertheless a slow laborious process and is now no longer followed in America.* The domestic wools are all purchased on an unwashed basis and this being true the operator who brook-washes his flock before shearing is not only out the time he has spent at this unpleasant task but owing to the shrinkage in his clip, due to washing, he does not receive as much for it as he otherwise would.

Many of the Texas wool-growers shear their flocks twice a year, the common belief being that a more rapid growth of wool takes place due to this practice. Although it is undoubtedly true that a more rapid growth is obtained by shearing twice a year, the additional profit, if there is any at all, is small, due to the additional expense of shearing two times.

Another claim is made that the sheep of southern Texas will shed a considerable portion of their wool if sheared only once per year. While this may be true in certain instances, it is no doubt also true that a good healthy flock, free from scab and lice, will not shed an amount worthy of mention. The flocks of Australia are sheared only once a year and the weather gets very hot during certain periods of the year.

The long summer heat of Queensland averages a much higher temperature than that of any sheep country in the world, yet it has been proved there that shearing twice a year is not only unprofitable, as far as the wool is concerned, but also detrimental to the sheep.

Owing to the fact that short or clothing wools command a smaller price than the combing wools of the same spinning count, it is best

*In England most of the sheep in the Down districts are washed in a shallow steam about ten days before shearing. This is necessary because these sheep are folded on green feed in the fall, and frequently on root crop during the winter, consequently the belly wool and even other portions of the fleece contain a considerable quantity of earth. Sheep grazed on permanent pastures during the winter are never washed before shearing. Wool is sold by auction in the British Isles and the system is so well regulated that growers always get the highest market value either washed or greasy.

and more profitable to shear only once a year when the flocks are healthy and free from external parasites.

The average wool-grower knows but little about the grading of wool, and, consequently, is at the mercy of the wool buyer at the time of selling his clip.

AUSTRALIAN AND AMERICAN METHODS OF WOOL CLASSIFICATION.

The Australian System.—The Australian method of preparing wool for market is the most up-to-date system in the world. Under this system cleanliness is practiced from start to finish. The sheep are more humanely handled by the shearers; the wool known as "bellies," first and second pieces, tags and locks, are separated from the main portion of the fleece, each of these particular classes going to form a bale of its own particular grade.

The fleece is classed at the shearing sheds by an expert wool classer and each fleece goes into a bale containing only that particular class of wool. Under this system ram, ewe, wether and yearling wool are each classed separately, owing to a pronounced difference in the quality of these wools. Under this system of preparing wool for market the owner of the wool knows the class of every pound of his product, and, when he offers it for sale, he is able to say "here is my clip classified wool, what is it worth?"

The American wool-grower under the American system of preparing wool for market has been for years in a regrettable position. He has learned nothing of the quality of his wool and he has, in a majority of instances, placed all of the different classes and grades into one sack. This being true, neither producer nor buyer can estimate the shrinkage accurately. For years it has fallen wholly upon the commission man to estimate the shrinkage of the slip, and since buyers have been forced to bid on clips of wool comprising many classes, it has been impossible to pay the producer exactly what the wool was worth.

Not until every American wool-grower puts his wool up in proper form and is able to say "I have ——— pounds of ———class wool at my disposal," will he realize the greatest profit. In order to realize the greatest profit on any commodity the operator must classify and standardize said product.

The American wool terms are merely arbitrary terms that have been adopted by the American wool dealers. As applied to the American trade, the wools graded as "fine" vary within rather large limits. The terms "one-half blood," "three-eights blood" and "one-fourth blood" wools, are terms that mean absolutely nothing to men engaged in wool production. According to the American system of grading the man who handles the wool in the warehouse knows nothing of the breeding of the sheep that produced the wool, yet upon grading it he says it is "one-half blood," "three-eighths blood," or something else. It is commonly supposed that the American terms originally denoted the kind of fleece produced by a sheep having the stated amount of Merino blood.

Some foreign countries have a unique system of wool classification

as compared with the American. The wool is classified at the shearing shed according to its average spinning counts.

In Australia, for instance, a "fine" merino fleece after being skirted would contain two spinning counts. Supposing the fr ' part of the fleece was 70's the hind portion would be 66's. If th greater portion of the fleece was 70's the classer would place it in the bin for that quality. The next fleece might be similar in every detail except proportion, and if the major portion of this fleece was 66's, he would place it in a different bin. In crossbreeds there are always at least three spinning counts in one fleece, and occasionally four. Take a

Australian Baled Wool.

straight halfbred, the shoulders would be 56's, the back 50's, and the britch 46's. The bulk quality would be 50's, and it would go into that bin after ascertaining the average, or bulk spinning count. The classer next considers condition and shrinkage, and this is the season for such brands as first and second, or "A. A." and "A." For instance, in "A. A." halfbred and "A." halfbred, the spinning counts and the length and strength of the fibre would be the same, but the

color of "A." would be duller, and the shrinkage heavier, than "A. A.," and so on. From the foregoing it is evident that the Australian system is clean, simple, honest, and reliable. When a wool-grower opens his morning paper and reads the cable reports of an Australian sale he can go out, look at his branded labels in the shearing shed, and tell the value of the wool to a cent a pound. When classed wool reaches the mill, the fleeces are then "noted," or divided into individual spinning counts. A Merino fleece would be broken into two parts and each part put in different baskets, while a crossbred fleece would be divided into three parts and each portion placed into different baskets.

The distinction between grading and classing is the fact that the former is somewhat vague, crude and unsatisfactory, while classing is more advanced, thorough, accurate and reliable, also fair and honest to buyer and seller.

In Autsralia wool classed as 80'S (80 spinning counts) will, when spun into one pound of yarn, reach twice the distance reached by one pound of yarn of 40 spinning counts. The spinning count is determined by the number of hanks 560 yards in length that can be spun from one pound of scoured wool. A number 75 yarn will contain 75 hanks of 560 yards each, or 42,000 yards in a pound of scoured wool. From the foregoing it will be readily seen that the foreign grading system is superior to the American, in that the terms have a direct application to the wool fiber and consequently mean more to the wool-growers.

FOREIGN WOOL CLASSES AND CORRESPONDING COUNTS FOR AMERICAN GRADE.*

American Grades	Foreign classers top-makers Quality.	Counts often spun to in America.
Fine	60's-70's	50's-60's
Half-blood	56's-60's	-40's
Three-eighths blood	50's-56's	-36's
Quarter blood	46's-50's	-32's
Low-quarter blood	40's-46's	-30's
Low, coarse, common or braid	36's-40's	-15's

In the American wool trade the terms X and XX usually apply to washed wool only. The XX grade is produced by the full blood Merino and is considered as the standard wool in the United States. There was formerly a XXX grade which was taken from the finest quality Merino at first shearing, but such a small amount of this grade was placed upon the market that quotations on it were discontinued. The grade X is produced by the poorer quality members of the Merino family. At the present day the X and XX grades are usually sold unwashed, and both are included in the one grade "fine unwashed."

The term "Delaine" in the wool trade causes a great deal of confusion in the minds of producers. In the wool trade it is an expression of grading applied to wool of fine character either XX or X

*U. S. Department of Agriculture Bulletin 206, p. 20.

quality, washed or unwashed, and possessing a staple approaching three inches on the greater portion of the fleece. It is quite often true that the breed of sheep called "Delaines" produce a certain amount of the so-called "Delaine" wool, but this is not always true.

The "fine unwashed" wools are produced by fine Merinos, Delaines, and Rambouillets. The "one-half blood" grades are produced when a Merino is crossed with a medium wooled sheep. Southdown wool sometimes grades as one-half blood.

The medium wool breeds produce the great bulk of the wools grading three-eigths blood and one-fourth blood, while the long wool breeds produce the great bulk of the braid and coarse wools. The braid or lustrous wools are characterized by length and lustre.

TERMS IN WOOL TRADE.

1. "Combing" wool is a wool of sufficient length for combing purposes. This length is usually two and one-half inches and over, but should never be less than two inches.
2. "Clothing" wools are those that are too short for combing purposes. True clothing wools should also be sound, dense and possess good felting properties.
3. "Unwashed" wool is wool in its natural state.
4. "Washed" wool is wool that has been washed on the sheep's back.
5. "Scoured" wool is wool that has been scoured after shearing by a mechanical process.
6. "Domestic" wool is the term applied to wools produced east of the Mississippi River. It is sometimes applied to American grown wools generally.
7. "Territory" wool is that which is produced in the western section of the United States. This wool is the same class as that graded as "domestic," but due to the fact that the western wools are exposed to changeable weather conditions, sand, alkali, etc., the fibres are naturally harsher and dirtier than domestic fleeces and, hence, command a lower price.

SIMPLE RULES FOR PREPARING WOOL FOR MARKET.

At shearing time the following suggestions should be kept in mind by sheepmen:

1. Do not overheat the sheep in driving them to the shearing pens because this causes them to sweat and, in traveling over a dusty range, much dirt accumulates in the wool.
2. Pen the sheep in a clean, dry lot at shearing time.
3. Shear on a clean floor.
4. Remove all dung locks from the fleece.
5. If you have a mixed band of sheep grade the wool as best you can. Never sack fine and long wools in the same sack. Place only Merino wools together; likewise the medium and long wools.
6. Keep the yearlings' wool separate from that from the aged ewes. It is more valuable.
7. Tie the fleeces with a paper twine.
8. Keep black fleeces by themselves.
9. Do not shear sheep while they are wet.

EXPRESSIONS FROM PRACTICAL SHEEPMEN.

Sheep-raising is an indispensable industry and, due to the increasing demand for wool, a great future lies ahead. There is a demand for every pound of wool produced in the world today, which is an assurance that the wool industry will in the future continue to prosper.

Some prominent Texas sheepmen in replying to questions asked by the senior writer expressed themselves as follows:

F. A. Miller, Denton County.

"On January 22, 1914, I purchased 89 head of graded Shropshire ewes and 10 wethers at a cost of $7 per head, delivered at the farm. The following month 80 of the ewes dropped 120 lambs. The flock wintered on the wheat fields and in April was removed to summer pasture, not a single pound of grain having been fed during the winter months. On September 4 of the same year, I marketed at Fort Worth for $647 net, all the lambs, the 10 wethers and several cull ewes, retaining on the farm 82 head of the best breeding ewes. Figuring the wool at a value of at least $100, the total income derived from the flock during the year amounted to $747. During the year the flock entirely paid for itself and I have disposed of the lambs, the 82 head of ewes remaining on the farm being clear profit."

A. D. Turner, Denton County, Texas.

"I do not think there is any kind of stock that pays like sheep on a small scale. A farmer owning a small bunch of sheep gets money crops during the whole year on account of the wool and mutton that can be sold. They turn the weeds that the farmer wishes to get rid of into money. I would not think of being without sheep on the farm. I have successfully raised sheep for the past 17 years continuously, and they have paid 100 per cent every year. I find them a benefit to the farm. I raise Shropshire, and find them the best all-around sheep. We sold our wool at hove this year at 25 cents per pound.

"During the spring months the flock is grazed on prairie grass only. After harvest the sheep are turned into the fields. During the fall and winter months the flock is given the run of the field and, in addition, is given a little cottonseed, alfalfa hay, oats and wheat pasture."

R. G. Love, Collin County, Texas.

"I would not try to farm without sheep as they are the best scavengers or weed-getters of all stock, enrich the soil faster, and do less damage in tramping the ground, especially over our black lands. Money invested in a small flock of sheep is the best investment a farmer can make.

"In the spring the flock is grazed on the pastures to keep the weeds down; in the summer months, in addition to grazing the pasture, they are supplied with some shelled oats; during the winter months they are given silage and cottonseed, and have the run of the wheat pasture."

Matt Patton, Bell County, Texas.

"A small flock of sheep is very profitable if properly managed. Every land owner and permanent, thrifty tenant, should have them. Where small flocks are kept I would suggest a mutton breed."

Mrs. N. A. Gent, McLennan County, Texas.

"A small farmer should have a few sheep. They are very profitable if handled right; that is, to eat weeds in fence corners, and on all land that can not be cultivated.

"I have been in the sheep business about 35 years and have made money, with the exception of only a few years, when wool was very low and mutton was cheap. I have never at any time wanted to get out of the sheep business. I have had more experience with Merino sheep than any other kind, but of late years have graded my flock up with Lincolns and Rambouillets, and I find that the wool is of a better grade and the sheep are so much larger for mutton that they are more profitable than the Merino.

"If you wish to make a success with any breed you must give them attention, seeing that they are properly bred and fed. In the spring the sheep graze on high land, as they are likely to get foot rot when grazed on the low, wet land. In the summer and fall they are grazed on the fields after the crops have been gathered."

W. K. O'Hanlon, Grayson County, Texas.

"Sheep are the most profitable of anything I raise. I raise hogs, cattle, sheep, and a few mules. On January 1, 1914, I had on hand 53 sheep; by January 1, 1915, I had sold sheep and wool to the amount of $312.05 and retained on the farm 49 head."

F. F. Edwards, San Saba County, Texas.

"Every farmer should have a small flock of sheep. They convert the waste product into money. Any machine or animal that will save the waste on a farm or ranch is what every one should have if possible.

"When not overstocked the pasture improves by having the weeds and brush destroyed. I have handled sheep for 25 years, in large flocks, in herds, and in small bunches turned loose in the pasture. I consider sheep the best investment any farmer can have. A small flock of goats are also very profitable in a brushy pasture, and both cattle and horses are healthier where sheep or goats run."

C. A. Winkler, Grayson County, Texas.

"A few sheep should be kept on every farm. I consider sheep the most profitable of all live stock. During the spring if grass is plentiful, no other feed is necessary. They have access to plenty of salt and fresh water at all times. During the summer and fall months the grain fields furnish fine grazing after harvest."

E. I. Robertson, Grayson County, Texas.

"I have owned sheep for 17 years and think that they are the best paying investment for a farmer. I never had to feed high priced feed. I sow quite an acreage of wheat and winter the flock on green feed. They love weeds, eat them out of the pasture and permit the grass to grow for other stock. A person should be careful not to overgraze a pasture. N never feed any grain during the year. During the fall and winter the flock is grazed on wheat and fall oats, and they stay in fine shape. In the summer months they are grazed on the native pasture."

C. L. Robison, Fisher County, Texas.

"A flock of sheep is the thing the farmer should have in the way of live stock. I bought 355 ewes last September, paying $3.50 per head. I have 3,500 pounds of wool worth $600. My lambs were dropped in February and will weigh 70 pounds by the 10th of June. So you can see that they will make me money."

Edgar Van Slyke, Cooke County, Texas.

"My 75 head of sheep will double in value this year. My lambs are the finest in North Texas. In raising sheep you should first have sheds, good water and plenty of feed for winter. Change pasture often in the summer and provide sheds to protect the flock from flies and from the sun during the hot summer weather. Keep the flock in a large corral at night. If the small farmer will provide good pasture and keep the mutton breeds, he will surely succeed.

"Sheep raising is less expensive than running a dairy. I am experimenting with my sheep all the time and they have more than doubled in value during the past year. I take the best of care of them always. I have a small farm of 100 acres adjoining a city of nine or ten thousand inhabitants. I raise a few Jerseys and horses, but my sheep pay the best of any stock on the farm."

H. Schneeman, Runnels County, Texas.

"We started in feeding 2,300 Shropshire lambs October 15 last, and about 15 days later 1,900 Mexican lambs and yearlings were added. We have a fenced lot 274 feet by 320 feet, and in this lot are ten pens made by placing the feed troughs in lines 32 feet apart. The feed troughs are 15 feet long and set a distance of 4 feet apart, and connected with a panel 4 feet long. In each line are 12 feed troughs, one 15 foot gate at lower end and a 20 foot salt or 15 foot water trough in every other line. In the first and last pens are 6 feed troughs and one salt trough, so that each pen has the same amount of linear feet feeding space. There are only nine lines of troughs in the lot out of which the ten pens are divided. A 20 foot alley is on the upper end, and may be used, if it is necessary, to change sheep from one pen to another, and when we cut some out for the market.

"When feeding we found, especially with lambs, that it is almost impossible to put feed out while they are in the pen, so we always

arranged to have our pen empty and start putting out the feed in the empty pen first and after the lambs have been fed about 15 days they will run into the feed pen as soon as the gate is opened for them; then the second lot will have feed put out, and so on until all sheep are fed.

"We start feeding with green sorghum maize and feterita cut up like ensilage in one-fourth inch lengths. As a whole, they eat very well in about three days. All the lambs and sheep I have fed for four years were range stock, and never were fed before. We started to teach them to eat meal or cake, using this year small cake, pea size, but it is as large as our ordinary pecans, though called pea cake at the mill. By using this with such feed as we use there is less waste to it than meal. In about 20 days we get them on full feed of three-fifths pound of pea cake, and one pound of threshed maize. We have four men to put out the feed, one man on the wagon puts out the roughness, one man puts out the cake, one man puts out the maize and one man follows behind with a stick and stirs the feed. We feed all the roughness they will eat. After they have been on feed about 45 days we start to cut the tops out and ship them, and in about 100 days we ship the last of the bunch, which is about 10 per cent of the whole. We feed twice a day, early in the morning, generally getting through with this first feed at 10:30 a. m., and starting again about 1 p. m., and finish about 4:30."

Sam H. Hill and Son, Tom Green County, Texas.

"We have run successfully for the last twelve or thirteen years, in this part of the state, goats, sheep, cattle and hogs, and they all are doing well. Any farmer or ranchman can put some sheep on his pasture land and it will make more grass than without them. The sheep will eat all of the weeds first and what bare places there may be will be set in a very short time with grass. Of course it will not do to stock a pasture too heavily with any kind of stock. There is no question but what every farmer and ranchman should have both sheep and cattle on their lands. There are more ranchmen who have been nothing but cattlemen in years past that are now either in the sheep business, or getting into it, when there is anything for sale. Some of the largest ranches in this part of Texas have put in sheep in the last two or three years."

A. G. Anderson, Terrell County, Texas.

"I have had 30 years experience and find that both cattle and sheep do better when the pasture is about half stocked with each, than when it is entirely stocked with either sheep or cattle. Sheep keep the weeds down and the grass grows thicker, and cattle eat the tall coarser grasses that sheep do not eat, so that they are a benefit to each other and to the pasture, making the pasture produce 10 to 20 per cent more feed."

J. R. Mims, Tom Green County, Texas.

"I handle several thousand sheep a year, but I never feed them. I fatten them on the range. We have what we call "fallow weed"

that comes up in the fall of the year and grows all winter. I depend on this weed and the grass. Some men feed cake in addition to this with good success."

CO-OPERATIVE ORGANIZATIONS.

Sheep production in the farming communities meets with a serious drawback owing to the lack of community interest in selling the products. In order to top the market, the lambs and mature muttons must be in price condition when offered for sale. The isolated farmer having only a few head of lambs for sale visits the market at irregular intervals, and such a man receiving no advice from sheep experts, approaches the buyer at a decided disadvantage.

An organization should be perfected to overcome this objection. This should include all of the sheepmen in a certain community and all would be enabled to work together. Such an organization was perfected by Tennessee sheepmen years ago, and its success has led to the formation of other clubs in the vicinity. One particular Tennessee club has a membership of about 50, all of whom live within a specified radius of their shipping station. A larger membership would interfere with the efficiency of the organization.) This organization is conducted with as little machinery as is consistent, the sheds and yards at the shipping point being owned by the railroad.

The officers of the Tennessee club consist of a president, secretary, and an executive committee of three. An annual meeting is held and every member is urged to be present or representd by proxy, to rport the number of lambs and the amount of wool that is likely to be offered for sale that year. The executive committee examines the lambs, advertises dates for deliveries and solicits bids from good reliable buying firms.

The lambs which are sold represent grades that vary from year to year. Upon delivery of the lambs to the station, the committee examines them and rejects all that do not come up to a certain specified standard. The rejected stock must be disposed of by the owner. They pass on lambs that weigh sixty pounds and over.

The officers of this particular Tennessee club believe that their sales average about three-quarters of a cent higher than the prices obtained by non-club members. The executive officers must be men who are experienced in sheep raising, trustworthy and honest. One of the notable rules of the Tennessee club is that none but registered Southdown rams must be used and there must be a uniformity of the breeding ewe flock.

In order to be successful every sheep-breeding community should be as a unit in lamb production, so that the market may know the product and bid for it through the efficient community association. The complaint is generally made by local dealers that owing to a decided lack of uniformity of the product offered it can not be profitably handled. Such an organization educates the farmers; they are brought together to exchange ideas; they learn how to breed and feed their sheep and, as a result, make a greater success of their venture.

ASSOCIATIONS AND SECRETARIES.

Breeders' Associations.	Secretaries.	Adresses.
American and Delaine-Merino Record Association	S. M. Cleaver	Delaware, O.
American Rambouillet Sheep Breeders' Association	Dwight Lincoln	Milford Center, O.
American Southdown Breeders' Association	Frank S. Springer	Springfield, Ill.
American Shropshire Registry Association	Miss Julia M. Wade	Lafayette, Ind.
American Oxford-Down Record Association	W. A. Shafor	Hamilton, O.
American Hampshire Sheep Association	Comfort A. Tyler	Coldwater, Mich.
Continental Dorset Club	Joseph E. Wing	Mechanicsburg, O.
American Cheviot Sheep Society	F. E. Dawley	Fayetteville, N. Y.
American Tunis Sheep Breeders' Association	Chas. Roundtree	Crawfordsville, Ind.
American Leicester Breeders' Association	A. J. Temple	Cameron, Ill.
American Cotswold Registry Association	F. W. Harding	Waukesha, Wis.
National Lincoln Sheep Breeders' Association	Bert Smith	Charlotte, Mich.

LOCAL WOOL AND MOHAIR MARKETING ASSOCIATIONS.

Wool Growers' Central Storage Company	W. B. Sayers	San Angelo, Texas.
National Mohair Growers' Association	J. E. McCarty	Paluxy, Texas.